Bulletin Contents

TSB Article 95-2-13 has been superseded by Article 95-4-10.

95-2, ***Publication Date: JANUARY 30, 1995***

Heater - Hot Air Entering The Passenger Compartment At All Times	Article No. 95-2-14

MEDIUM/HEAVY TRUCK:
1992-95 CARGO SERIES

ISSUE:
Full heat may be entering the passenger compartment from the heater assembly. When this condition exists, moving the heater temperature control lever to the "COLD" position will have no effect on decreasing the amount of heat entering the passenger compartment. This may be caused by the heater core inlet supply hose being installed on the outlet side of the heater core. The Cargo heater design uses the control valve on the outlet side of the core. If the heater is plumbed in reverse (engine coolant flow to control valve), the control valve will not keep coolant flow from entering/circulating through the heater core resulting in continuous hot air output.

ACTION:
Remove the heater core supply hoses and reverse their positions. Refer to the following for details.

SERVICE PROCEDURE

1. Drain enough coolant from the cooling system to ensure the heater core is empty.
2. Remove the hose clamps on the heater hoses at the heater core.
3. Remove the hoses from the heater core and switch their positions.
4. Reinstall the hose clamps and torque to 30-40 lb-in (3.4-4.5 N-m).
5. Replace the engine coolant following the instructions in the Owner Guide.

OTHER APPLICABLE ARTICLES: NONE

WARRANTY STATUS: Eligible Under Basic Warranty Coverage

LABOR ALLOWANCE

DEALER CODING

OASIS CODES: 208000, 208999

Bulletin Contents

TSB Article 95-3-24 has been superseded by Article 95-15-17.

95-3, ***Publication Date: FEBRUARY 13, 1995***

• **Glass - Corrosion From Windshield Weatherstrip Scraping Paint Off Surrounding Body Surface - Vehicles Built Before 8/31/94 - Service Tip** • **Paint - Corrosion From Windshield Weatherstrip Scraping Paint Off Surrounding Body Surface - Vehicles Built Before 8/31/94 - Service Tip**	**Article No. 95-3-26**

MEDIUM/HEAVY TRUCK:
1970-95 L SERIES

ISSUE:
Some trucks may have paint scraped from the body surfaces directly in contact with the windshield weatherstrip, causing corrosion. This is due to normal movement of the windshield weatherstrip which scrapes the paint from the windshield opening flange.

ACTION:
A resolution using a urethane film between the windshield weatherstrip and the opening flange has been developed. It has been used in production beginning in August 1994. Refer to the following procedure for service details.

SERVICE PROCEDURE

1. Remove windshield and weatherstrip and hold for reinstallation, if possible. Refer to the appropriate L-Series Service Manual and Section.

2. Repair rusted sections including application of primer and topcoat.

   a. Remove corrosion from sheet metal sections using sanding or blasting methods.

   b. Use appropriate methods to cover exposed interior and exterior surfaces to prevent damage.

   c. Apply one (1) coat of self-etching primer over all exposed bare metal areas. **Follow manufacturer label instruction.**

   d. Follow with one (1) coat of primer surfacer. **Follow manufacturer label instruction.**

   e. Apply topcoat per manufacturer label instruction.

3. Remove the components of the kit and identify the top, bottom, left, and right parts. On the left and right parts, locate the "UP" arrow which indicates the top of part. Refer to Figure 1.

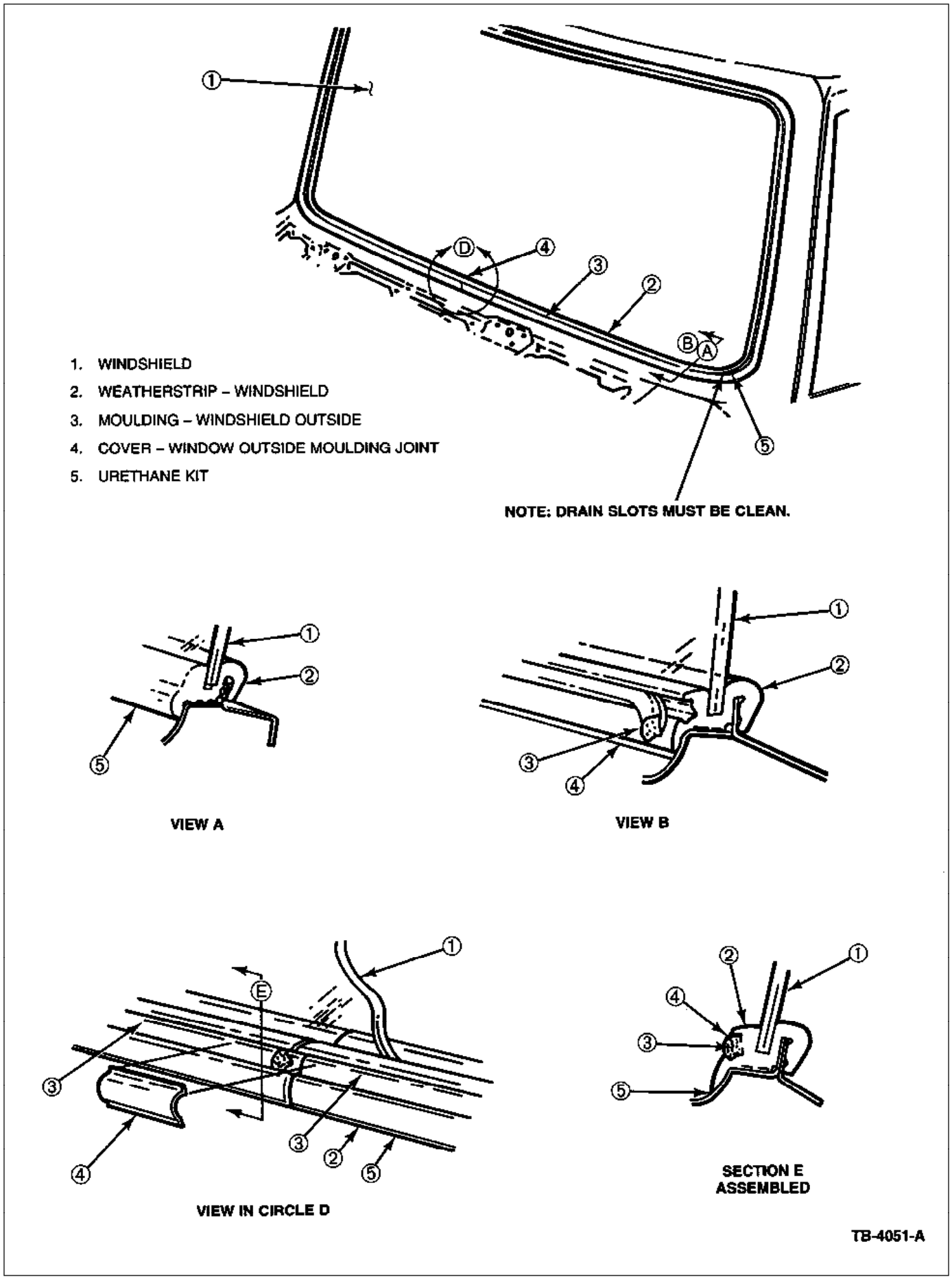


Figure 1 - Article 95-3-26

4. Install the right and left urethane components on the flange of the windshield opening, ensuring the arrows are pointing up. Refer to Figure 1.

5. Install the top and bottom urethane components across the top and bottom flange of the windshield opening. Refer to Figure 1.

6. Replace weatherstrip and windshield.

OTHER APPLICABLE ARTICLES: NONE

WARRANTY STATUS: Eligible Under Basic Warranty Coverage

LABOR ALLOWANCE

DEALER CODING

OASIS CODES: 102000, 106000

95-3, ***Publication Date: FEBRUARY 13, 1995***

Steering - Revised Camber Specification - Vehicles Equipped With 10K, 12K, 13.2K, And 14.6K Front Axles	**Article No. 95-3-27**

MEDIUM/HEAVY TRUCK:
1987-95 CARGO SERIES, F & B SERIES, L SERIES

ISSUE:
Some trucks may show irregular front axle tire wear and reduced tire life. This can be due to improper total vehicle alignment, excessive front axle toe-in, excessive bearing adjustment, wrong tires for application, or other (see appropriate vehicle Service Manual, Page 04-04-8).

ACTION:
Revised front axle assemblies have been designed with symmetrical camber specifications which may reduce tire wear. Refer to the following procedure for service details.

NOTE:
IT IS THE CUSTOMERS RESPONSIBILITY TO ENSURE TOE-IN AND TOTAL VEHICLE ALIGNMENT SPECIFICATIONS ARE CORRECT.

SERVICE PROCEDURE

For vehicles exhibiting this concern, check the part number of the axle, This number can be found on the center of the axle on the web.

Refer to the following chart. If the axle part number falls in the old part number column, the camber needs to be checked (older axle assemblies may meet the new camber specifications). The revised specification is 3/8°±3/8°.

If the camber does not fall into the specification, the axle assembly needs replacement. Always use new original equipment U-bolts if replacing axle. Refer to the following chart for correct replacement axle. Refer to the appropriate vehicle Service Manual for axle replacement procedure and correct torque values.

NOTE:
ADVISE CUSTOMER THAT IF THE AXLE IS REPLACED, THE FRONT AXLE U-BOLTS NEED TO BE RETORQUED AFTER THE FIRST 1,000 MILES (1 600 km). THEREAFTER, FOLLOW THE MAINTENANCE SCHEDULE FOR CORRECT RETORQUE INTERVALS.

OTHER APPLICABLE ARTICLES: NONE

WARRANTY STATUS: INFORMATION ONLY

OASIS CODES: 304000

Bulletin Contents

TSB Article 95-4-6 has been superseded by Article 95-8-2.

95-4, ***Publication Date: FEBRUARY 27, 1995***

• **Lack Of Power - Excessive Free Play At Throttle Linkage - Frequent Throttle Linkage Adjustments - FNH 6.6L And 7.8L Engines** • **Throttle Linkage - Excessive Free Play - Lack Of Power - FNH 6.6L And 7.8L Engines - Frequent Throttle Linkage Adjustments**	**Article No. 95-4-10**

MEDIUM/HEAVY TRUCK:
1986-93 F & B SERIES, L SERIES

This TSB is being republished in its entirety to include the correct Dealer Coding and Condition Code.

ISSUE:
The Ford New Holland engine may exhibit the need for frequent throttle linkage adjustments because the throttle linkage/accelerator pedal has excessive free play or the engine lacks power. This may be caused by the governor lever which may wear and prevent the fuel injection pump from reaching Wide Open Throttle (WOT). Adjusting the throttle linkage can compensate for this wear, but eventually the wear in the governor lever will exceed the adjustment capability of the throttle linkage.

ACTION:
Inspect the condition and operation of the Governor Lever Assembly. If the governor lever is excessively loose or can be rocked side-to-side it should be replaced.

PART FEATURES

- Smaller throttle rod attaching bolt hole (on L-Series this will require a smaller throttle ball stud, on F/B-Series a new throttle rod assembly is used).
- It does not have an indexing feature as the previous lever did (the new lever can be installed in any position on the injection pump shaft).
- A round spacer with a flat spot in slot/gap of the governor lever (this spacer must be rotated so the flat spot is aligned with the pump shaft before the new lever can be installed, Figure 1).

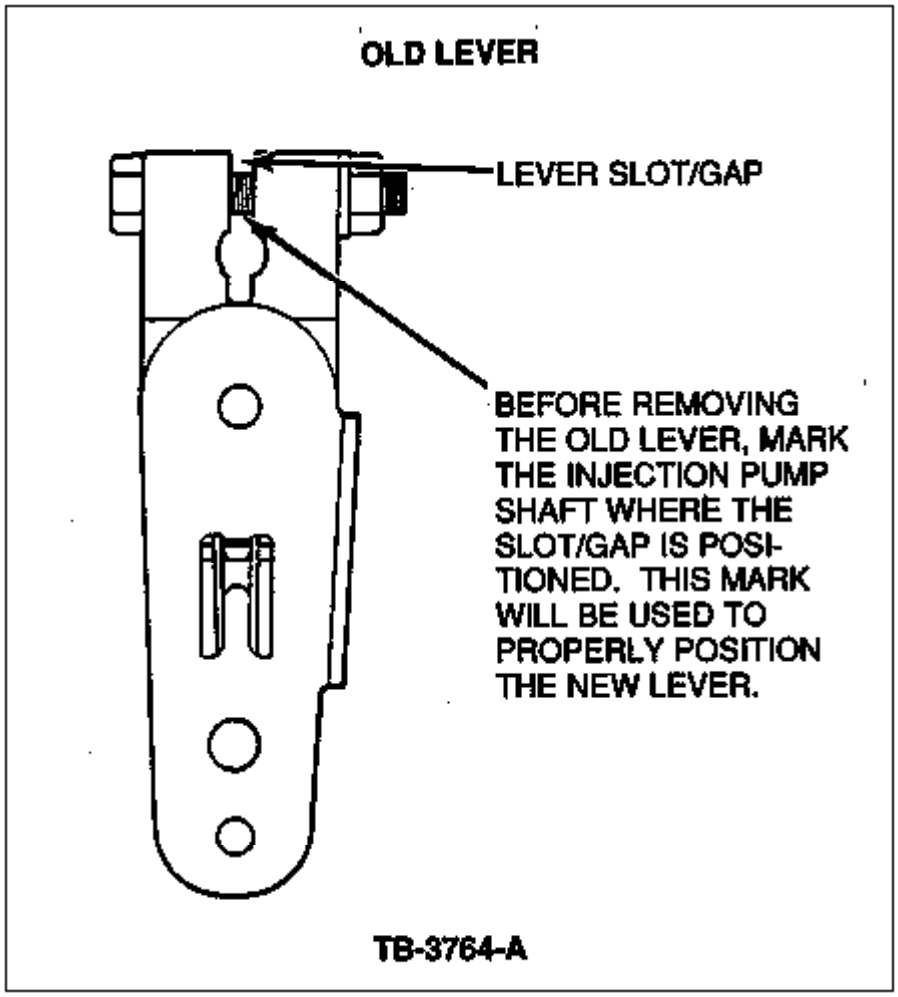

OLD LEVER
LEVER SLOT/GAP
BEFORE REMOVING THE OLD LEVER, MARK THE INJECTION PUMP SHAFT WHERE THE SLOT/GAP IS POSI-TIONED. THIS MARK WILL BE USED TO PROPERLY POSITION THE NEW LEVER.
TB-3764-A

Figure 1 - Article 95-4-10

CAUTION:
THE OLD STYLE GOVERNOR LEVER IS DESIGNED SO IT CAN BE INSTALLED ON THE PUMP SHAFT IN ONLY ONE (1) POSITION. THE NEW LEVER DOES NOT HAVE THIS FEATURE AND IT IS VERY IMPORTANT THAT THE LEVER IS POSITIONED CORRECTLY TO ENSURE PROPER ENGINE OPERATION. PLEASE READ THIS ENTIRE PROCEDURE BEFORE ATTEMPTING ANY REPAIRS, THEN FOLLOW THIS PROCEDURE CAREFULLY.

REPAIR PROCEDURES

L-SERIES:

1. Remove the throttle spring from the governor lever.

2. Disconnect the throttle ball stud from the governor lever.

3. Attach the new ball stud to the throttle rod and screw it on so that it is in the same position as the old one was.

   NOTE:
   BEFORE REMOVING THE OLD GOVERNOR LEVER, USE A PERMANENT MARKING PAINT TO MARK THE LOCATION OF THE OLD GOVERNOR LEVER ON THE PUMP SHAFT.

4. Mark the injection pump shaft where the lever slot/gap is positioned (this will be used later to properly

position the new lever, Figures 1 and 2).

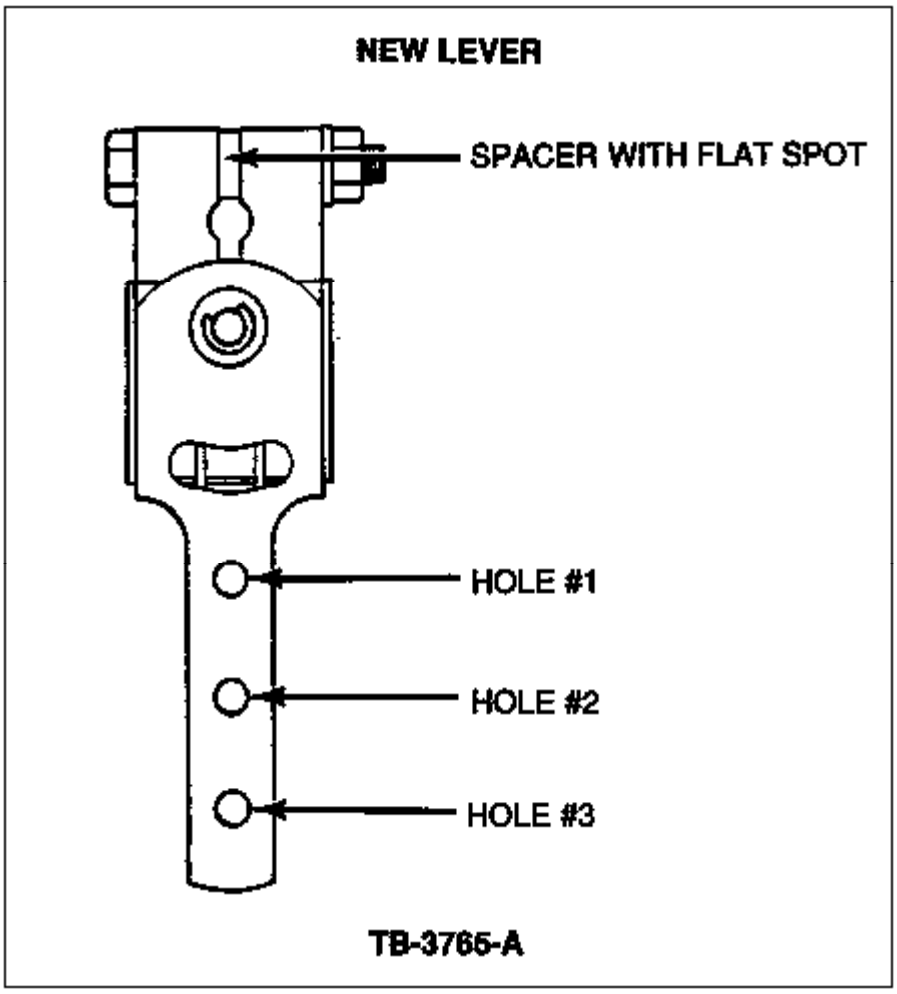


Figure 2 - Article 95-4-10

5. Loosen the governor lever pinch bolt and carefully remove the lever from the pump shaft.

6. Install the new lever with the slot/gap aligned with the paint mark. This will position the new lever in the same location as the old lever. The spacer located on the pinch bolt in the slot/gap of the new governor lever may need to be rotated so that it aligns with the pump shaft. This allows the lever to be installed.

7. Torque the pinch bolt nut to 90 lb-in (10.2 N-m).

8. Install the new throttle rod ball stud into the #1 hole on the governor lever (the hole closest to the pump shaft, Figure 2).

9. Torque the nut 12-17 lb-ft (16.3-23 N-m).

10. Connect the throttle return spring to the #2 hole (middle hole of the governor lever, Figure 2).

11. The #3 hole is not used.

Throttle Adjustment Procedure

12. The throttle adjustment procedure (Figure 4) is as follows:

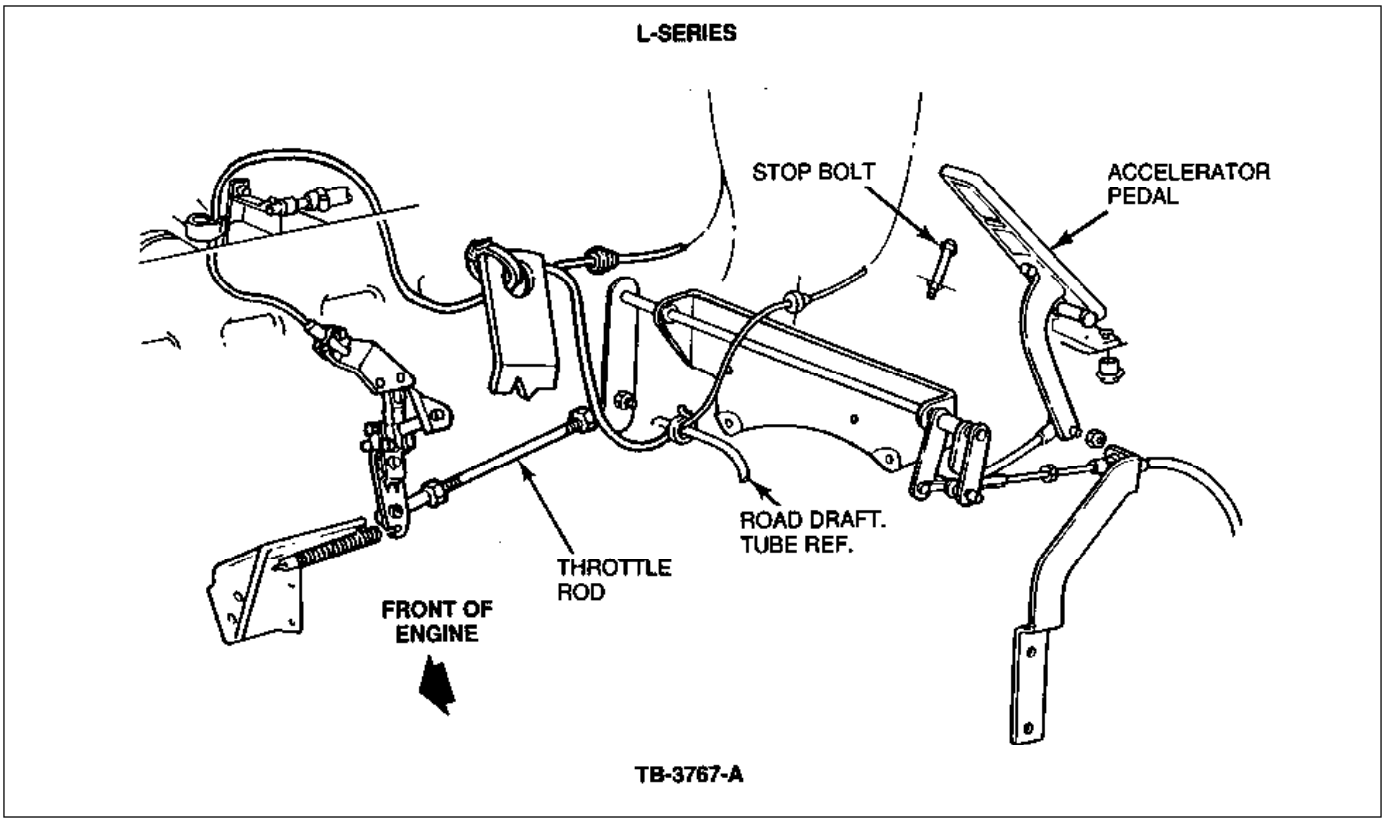


Figure 4 - Article 95-4-10

a. With the accelerator pedal against the stop bolt, adjust the throttle rod so the fuel injection pump throttle lever is at full throttle (wide open throttle).

b. Shorten the throttle rod until approximately 1/16" of break over is achieved at the throttle lever.

c. Tighten the jam nuts.

d. Ensure lever has break over when the accelerator pedal is at wide open throttle.

Final Inspection

13. The final inspection steps are as follows:

a. Once the new parts have been installed and attaching nuts torqued properly, check the operation of the accelerator pedal and linkage to ensure it works easily and returns properly.

b. The pedal must return completely from wide open throttle without any drag or binding.

c. No surrounding engine compartment components (hoses, wiring, etc.) may contact any moving part of the accelerator controls.

d. If the vehicle is equipped with a hand throttle, check the throttle handle for flushness with the dash panel when engine is at idle. Adjust if required.

NOTE:
THE NEW GOVERNOR LEVER DOES NOT HAVE AN INDEXING FEATURE. THEREFORE, FOR ANY FUTURE FUEL INJECTION PUMP OR LINKAGE REPAIR THAT REQUIRES REMOVAL OR REPLACEMENT OF THE GOVERNOR LEVER, IT WILL BE NECESSARY TO NOTE AND/OR MARK THE LOCATION OF THE LEVER SO THAT IT CAN BE REINSTALLED IN THE CORRECT POSITION.

F/B-SERIES:

1. Remove the throttle return spring from the governor lever.

2. Disconnect the throttle rod from both the governor lever and the accelerator pedal lever.

3. On this application, the rod must be replaced.

   NOTE:
   BEFORE REMOVING THE OLD GOVERNOR LEVER, USE A PERMANENT MARKING PAINT TO MARK THE LOCATION OF THE SLOT/GAP OF THE OLD GOVERNOR LEVER ON THE PUMP SHAFT.

4. Mark the injection pump shaft where the lever slot/gap is positioned (this will be used later to properly position the new lever, Figures 1 and 2).

5. Loosen the governor lever pinch bolt and carefully remove the lever from the pump shaft.

6. Install the new lever with the slot/gap aligned with the paint mark. This will position the new lever in the same location as the old lever. The spacer located on the pinch bolt in the slot/gap of the new governor lever may need to be rotated so that it aligns with the pump shaft. This allows the lever to be installed.

7. Torque the pinch bolt nut to 90 lb-in (10.2 N-m).

8. Install the new throttle rod ball stud into the #1 hole on the governor lever (the hole closest to the pump shaft, Figure 2).

9. Torque the nut 12-17 lb-ft (16.3-23 N-m).

10. Attach the opposite end of the throttle rod to the accelerator pedal lever.

11. Torque the attaching nut to 85-115 lb-in (9.6-13 N-m).

12. Connect the throttle return spring to the #2 hole (middle hole of the governor lever, Figure 2).

13. The #3 hole is not used.

Throttle Adjustment Procedure

14. The throttle adjustment procedure (Figure 5) is as follows:

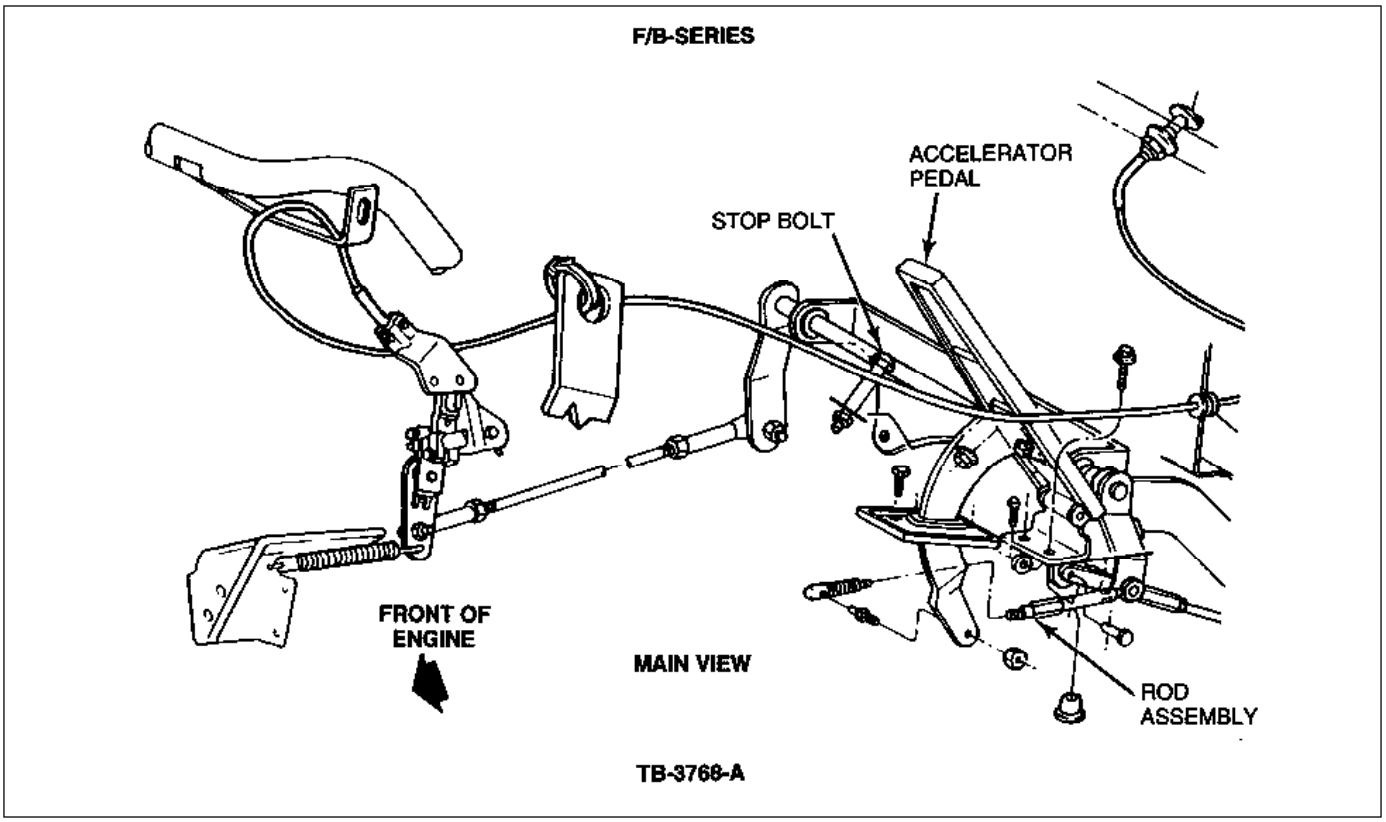


Figure 5 - Article 95-4-10

a. With the accelerator pedal against the stop bolt, remove the ball stud from the accelerator pedal blade.

b. Adjust the rod so the fuel injection pump throttle lever is at full throttle (wide open throttle).

c. Increase the length of the rod assembly until approximately 1/16" of break over is achieved in the throttle lever.

d. Tighten the jam nuts.

Final Inspection

15. The final inspection steps are as follows:

a. Once the new parts have been installed and attaching nuts torqued properly, check the operation of the accelerator pedal and linkage to ensure it works easily and returns properly.

b. The pedal must return completely from wide open throttle without any drag or binding.

c. No surrounding engine compartment components (hoses, wiring, etc.) may contact any moving part of the accelerator controls.

d. If the vehicle is equipped with a hand throttle, check the throttle handle for flushness with the dash panel when engine is at idle. Adjust if required.

NOTE:
THE NEW GOVERNOR LEVER DOES NOT HAVE AN INDEXING FEATURE. THEREFORE, FOR ANY FUTURE FUEL INJECTION PUMP OR LINKAGE REPAIR THAT REQUIRES REMOVAL OR REPLACEMENT OF THE GOVERNOR LEVER, IT WILL BE NECESSARY TO NOTE AND/OR MARK THE LOCATION OF THE LEVER SO THAT IT CAN BE REINSTALLED IN THE CORRECT

POSITION.

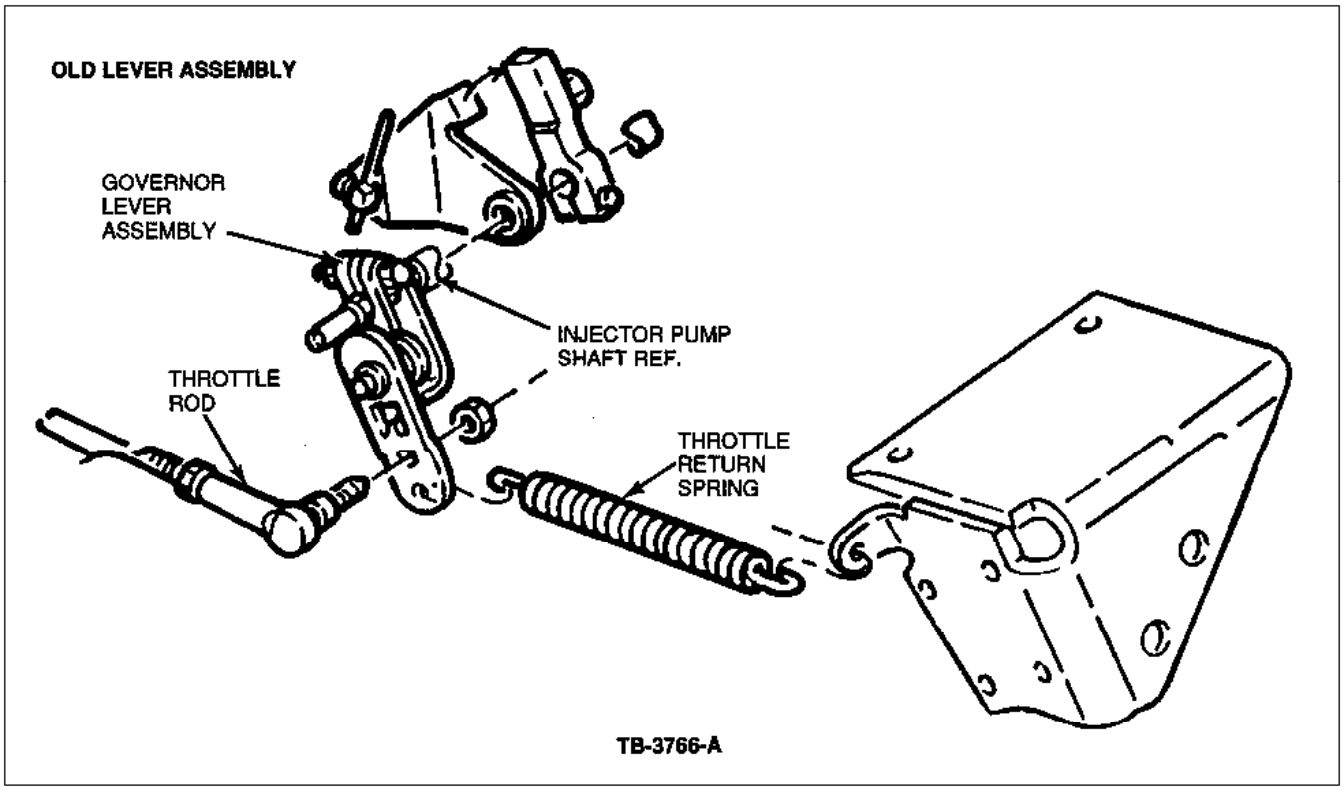


Figure 3 - Article 95-4-10

SUPERSEDES: 95-2-13

WARRANTY STATUS: Eligible Under Basic Warranty Coverage

LABOR ALLOWANCE

DEALER CODING

OASIS CODES: 610000, 611000, 614000

95-4, ***Publication Date: FEBRUARY 27, 1995***

• **Reduced Engine Power - Incorrect Illumination Of The "Stop Engine" Lamp - Vehicles With Detroit Diesel Series 60 Engines (DDEC-III) - Built After 11/30/94** • **Warning Lamp Illumination - "Stop Engine" - Incorrect Illumination On Vehicles With Detroit Diesel Series 60 Engines (DDEC-III) - Built After 11/30/94** • **Warning Lamp - "Stop Engine" - Incorrect Illumination - Vehicles With Detroit Diesel Series 60 Engines (DDEC-III) - Built After 11/30/94**	**Article No. 95-4-11**

MEDIUM/HEAVY TRUCK:
1994-95 L SERIES

ISSUE:
On some vehicles, the "Stop Engine", "Engine Warning" or "Engine Fluids" lamp may illuminate incorrectly. This may be caused by a missing resistor in the low coolant level sensor circuit, wrong connector being installed on the coolant sensor or corrosion built up on the sensor. Depending on the programming of the electronic control assembly, the affects could range from illumination of the "Stop Engine" light to decreased engine power or the engine being shut off.

ACTION:
Determine the cause of the concern by using the following Service Procedure. If necessary, install a Jumper Wire Assembly (F5HZ-12A690-L) into the low coolant level sensor wiring harness by unplugging the low coolant level sensor and installing the jumper between the sensor and sensor connector. The jumper wire assembly has a built-in resistor to reduce the possibility of false illumination of the "Stop Engine" lamp.

SERVICE PROCEDURE CONCERNS

CONCERN #1

The latest generation Detroit Diesel Electronic Engine Control (DDEC-III) requires the low coolant sensor circuit to have a 560K Ohm resistor for the diagnostic system to function properly. For 1994-1/2 through 1995 L-Series vehicles, this resistor is not present. This could cause a "connector not engaged" fault code. To resolve this concern, a Service Jumper Wire Assembly (F5HZ-12A690-L) has been released which contains the resistor. The assembly consists of both mating connectors and can be installed between the low coolant sensor and the engine wiring harness. All vehicles should have this wiring assembly installed if it is not already present.

CONCERN #2

The Engine Wiring Harness (-14365-) has two (2) identical electrical connectors at the same location. These connectors will both engage the low coolant level sensor connector. A visual check should be made if a "connector not engaged" code is present to ensure the color coding from the engine wiring assembly is GY/Y and O/BL. If the connector containing the PK and BK wires is connected to the low coolant sensor, remove it and install the connector which contains the GY/Y and O/BL wires.

CONCERN #3

The polarity of the low coolant level sensor has been found to be incorrect. This will cause an advanced corrosion build-up condition on the brass fitting which could block the current flow from the brass through the coolant to the tip. A vehicle with this condition will typically show a low coolant level code from 25,000-50,000

miles (40,200-80,400 km) when the coolant is actually at the proper level.

To correct this concern, perform the following:

1. Remove enough coolant from the reservoir to remove the low coolant level sensor and remove the sensor from the reservoir.

2. With the key in the "On" position and using Rotunda Digital Volt-Ohmmeter (014-00407 or equivalent), check the polarity of the low coolant level sensor. This system operates on approximately 5 volts DC current. Connect the positive (+) probe to the tip and the negative (-) probe to the brass connector. A positive (+) reading should appear. If a negative (-) voltage is present, the polarity is incorrect and needs to be reversed.

3. If the polarity is incorrect, turn the ignition key to the "Off" position and change the polarity by removing the wires from the connector shell and reversing their position.

4. Remove the sensor and examine the edge of the brass which conducts the current for corrosion build-up (Figure 1). If corrosion is present, remove the corrosion with a small knife and emery cloth taking caution not to cut or abrade the plastic tip insulator.

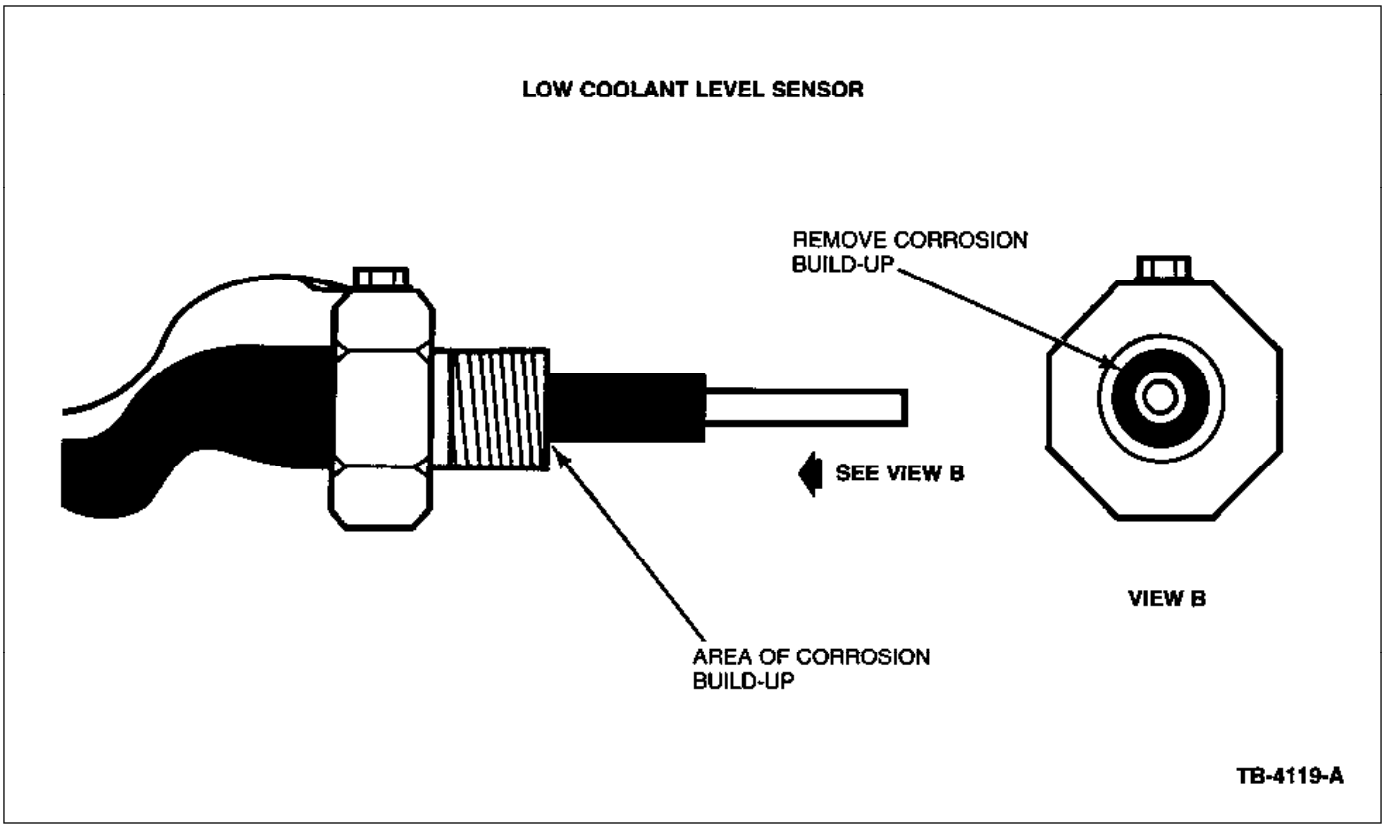


Figure 1 - Article 95-4-11

5. Clean and reinstall the sensor into the reservoir. Ensure Service Jumper (F5HZ-12A690-L) has also been installed between the engine wiring harness and the low coolant level sensor. Refill coolant as necessary.

OTHER APPLICABLE ARTICLES: NONE

WARRANTY STATUS: Eligible Under Basic Warranty Coverage

LABOR ALLOWANCE

DEALER CODING

OASIS CODES: 203000, 203200, 206000, 698298

95-5, ***Publication Date: MARCH 13, 1995***

Air Conditioning - Adding Refrigerant Oil - Service Tip	Article No. 95-5-12

FORD:
1990-93 FESTIVA
1990-94 TEMPO
1990-95 CROWN VICTORIA, ESCORT, MUSTANG, PROBE, TAURUS, THUNDERBIRD
1994-95 ASPIRE

LINCOLN-MERCURY:
1990-92 MARK VII
1990-94 TOPAZ
1990-95 CONTINENTAL, COUGAR, GRAND MARQUIS, SABLE, TOWN CAR, TRACER
1991-94 CAPRI
1993-95 MARK VIII

MERKUR:
1990 SCORPIO

LIGHT TRUCK:
1990 BRONCO II
1990-95 AEROSTAR, BRONCO, ECONOLINE, F SUPER DUTY, F-150-350 SERIES, RANGER
1991-95 EXPLORER
1993-95 VILLAGER
1995 WINDSTAR

MEDIUM/HEAVY TRUCK:
1990-91 C SERIES, CL-CLT-9000 SERIES
1990-95 CARGO SERIES, F & B SERIES, L SERIES

ISSUE:
Current repair procedures do not advise on the addition of refrigerant oil to the A/C system when a minor repair is made.

ACTION:
Add 0.06 L (2 oz) of the proper type new refrigerant oil to the system, before recharging, when servicing concerns that do not require major component replacement. Repairs considered minor are: O-ring leaks, charge port leaks, Pressure Relief Valve (PRV) leaks, compressor shaft seal leaks, hose leaks, etc. Remember to use polyalkylene glycol (PAG) oil with R-134a systems and mineral oil with R-12 systems.

OTHER APPLICABLE ARTICLES: NONE

WARRANTY STATUS: INFORMATION ONLY

OASIS CODES: 208000, 208999

95-5, ***Publication Date: MARCH 13, 1995***

Instrument Panel - Panel Cover Cracks Near Hand Throttle - City Delivery Vehicles	Article No. 95-5-26

MEDIUM/HEAVY TRUCK:
1987-94 L SERIES

ISSUE:
The instrument panel cover may crack near the hand throttle on L-Series with the City Delivery Package. This occurs because this area of the panel lacks sufficient support.

ACTION:
Install a redesigned instrument cluster support bracket to prevent cracking of the instrument panel cover. The new bracket can be retrofitted on all 1987-94 City Delivery units. If the cover is already cracked, install a new instrument cluster cover assembly which includes the reinforcing bracket. Refer to the appropriate model year L-Series Service Manual, Section 13-01, for removal and installation procedures.

OTHER APPLICABLE ARTICLES: NONE

WARRANTY STATUS: Eligible Under Basic Warranty Coverage

LABOR ALLOWANCE

DEALER CODING

OASIS CODES: 107000

Bulletin Contents

TSB Article 95-5-28 has been superseded by Article 97-6-30.

95-5, ***Publication Date: MARCH 13, 1995***

• **Air Conditioning - Heater - Little Or No Air From Defrost Register - Vehicles Built From 12/1/91 To 9/1/94** • **Heater - Air Conditioning - Little Or No Air From Defrost Register - Vehicles Built From 12/1/91 To 9/1/94**	**Article No. 95-5-29**

MEDIUM/HEAVY TRUCK:
1991-95 L SERIES

ISSUE:
Air may not blow out of the defrost registers when control lever is in defrost mode on some vehicles. This is due to a malfunctioning control valve assembly.

ACTION:
Verify vehicle has a malfunctioning valve assembly by positioning the selector lever in the defrost mode. If the selector does not firmly stay in the defrost position, or little air blows through the defrost register while the fan is operating, install the new valve assembly (F4HZ-18B679-A or F4HZ-18B679-B, identified by raised letters F-94) according to the following service details.

REMOVAL

1. Remove access panel which surrounds the control and remove the two (2) fasteners which secure the control to the instrument panel.

2. Carefully pull control assembly back to expose the temperature door cable anchor point. With needle-nosed pliers or blade-type screwdriver, pinch the **blue** fitting snap-in tangs and push the fitting out of the square hole. Hold control firmly with one (1) hand to preclude any type of bending of the plastic bracket when applying force of any kind.

3. With the **blue** fitting free, it will now be possible to disengage the Z-bend at the end of the wire from the control temperature lever hole. Some articulation of the cable end is required.

4. Disconnect the tube harness by pressing and holding in the colored release buttons while pulling out the tubing.

   NOTE:
   EACH PORT HAS A METAL INSERT OR SLEEVE WHICH ENGAGES THE TUBING INSIDE DIAMETER. SHOULD THIS INSERT PULL OUT OF THE PORT WITH THE TUBING, MAKE SURE IT IS RE-ENGAGED INTO THE REPLACEMENT TUBING UPON REASSEMBLY.

5. Remove the fastener securing the aluminum cover plate.

6. Remove the two (2) screws securing the electrical mode switch to the bracket.

7. Remove the two (2) Phillips' head screws securing the spool valve assembly to the bracket.

8. Lift the spool body gently from the mounting recess by sliding the spool to the lower end of the spool guide track. Take care not to damage the spool guide fingers.

   CAUTION:
   DO NOT PULL THE SPOOL OUT OF THE SPOOL BODY. IF THE SPOOL IS REMOVED IT COULD

BECOME CONTAMINATED AND RESULT IN A CONTROL ASSEMBLY FAILURE.

INSTALLATION

1. Apply a small amount of grease (Lubriplate #30) to the spool guide track.
2. Gently position the spool slider into the guide track and locate the spool body into its recess.
3. Reinstall the spool valve assembly and secure with the two (2) Phillips' head screws.
4. Align the lever slot with the spool slide hole. Position the mode switch so the switch post passes through the lever slot and slide holes and install the mode switch fasteners.
5. Reinstall the aluminum cover plate and secure with fasteners.
6. Reconnect the tube harness to the appropriate color-coded ports. Each tube end has a positive identification line as a visual check for correct insertion. Lines on all the tubes should not be visible if properly inserted.
7. Reinstall the control assembly in the dash panel using the previous steps in reverse order.

OTHER APPLICABLE ARTICLES: NONE

WARRANTY STATUS: Eligible Under Basic Warranty Coverage

LABOR ALLOWANCE

DEALER CODING

OASIS CODES: 208000, 208100, 208200, 208300, 208999

95-5, ***Publication Date: MARCH 13, 1995***

• **Turn Signal Or Turn Signal Hazard Flasher - Inoperative When Flasher Circuit Is Overloaded - Vehicles With "Hobbs" Heavy Duty Flasher And Fleet Or Full Instrumentation** • **Wiring - Upgrade Of Wiring And Components For Increased Flasher Circuit Capacity - Vehicles With "Hobbs" Heavy Duty Flasher And Fleet Or Full Instrumentation**	**Article No. 95-5-30**

MEDIUM/HEAVY TRUCK:
1987-94 L SERIES

This TSB is being republished in it entirety to update the parts listings.

ISSUE:
The turn signal and hazard warning flasher may become inoperative if the flasher circuit is overloaded.

ACTION:
Install an improved overlay-type harness which provides additional flasher circuit capacity by replacing the existing 14 gauge circuit in the -14401- wiring assembly with a 10 gauge wire and an improved connector. This wiring assembly also allows relocation of the flasher from under the instrument panel to a more accessible location in the circuit breaker panel area. Refer to the following procedure for service details.

1. Loosely route the new wiring assembly (F4HZ-14A411-A) from the area of the turn signal switch on the steering column to the area of the circuit panel, Figures 1 and 2.

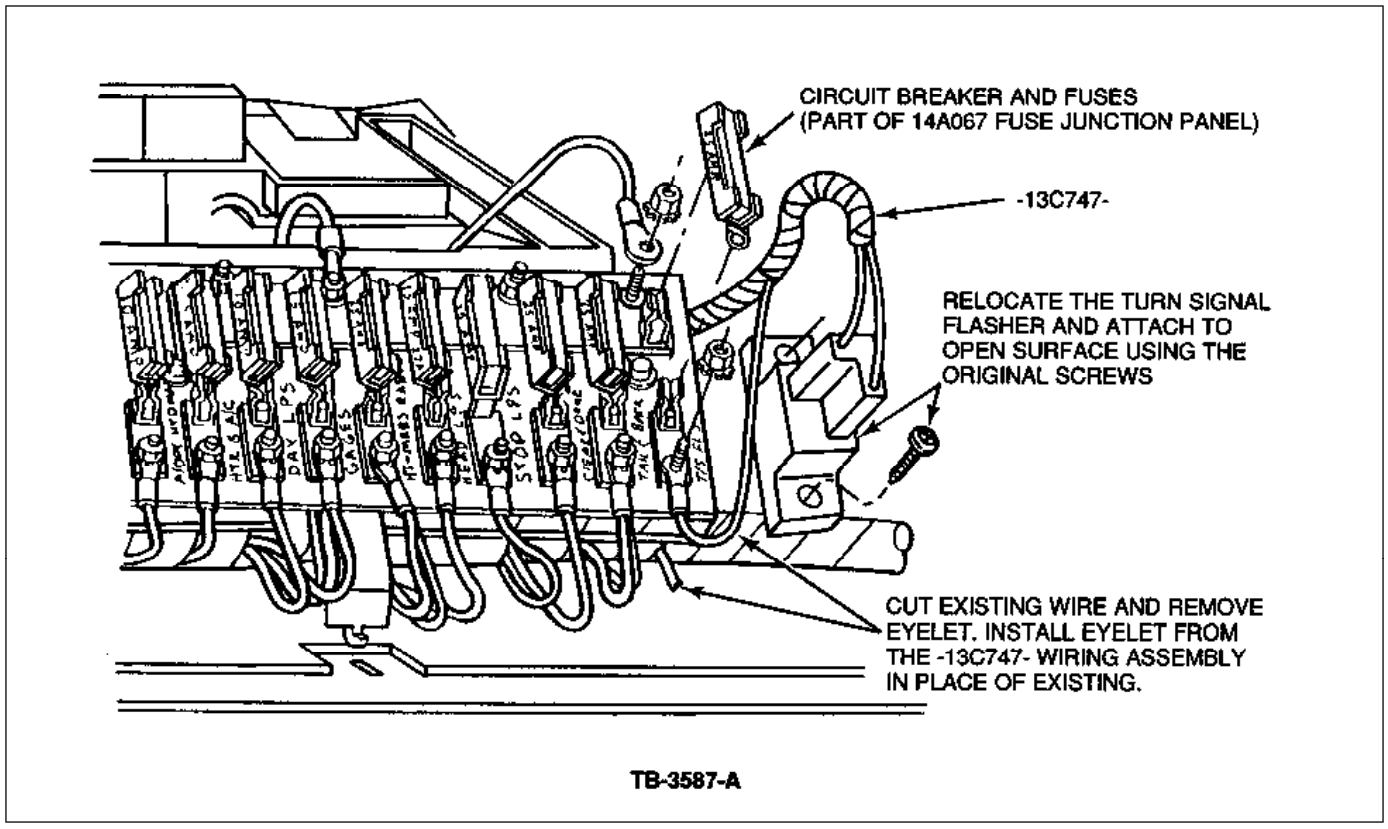

CIRCUIT BREAKER AND FUSES
(PART OF 14A067 FUSE JUNCTION PANEL)
-13C747-
RELOCATE THE TURN SIGNAL FLASHER AND ATTACH TO OPEN SURFACE USING THE ORIGINAL SCREWS
CUT EXISTING WIRE AND REMOVE EYELET. INSTALL EYELET FROM THE -13C747- WIRING ASSEMBLY IN PLACE OF EXISTING.
TB-3587-A

Figure 1 - Article 95-5-30

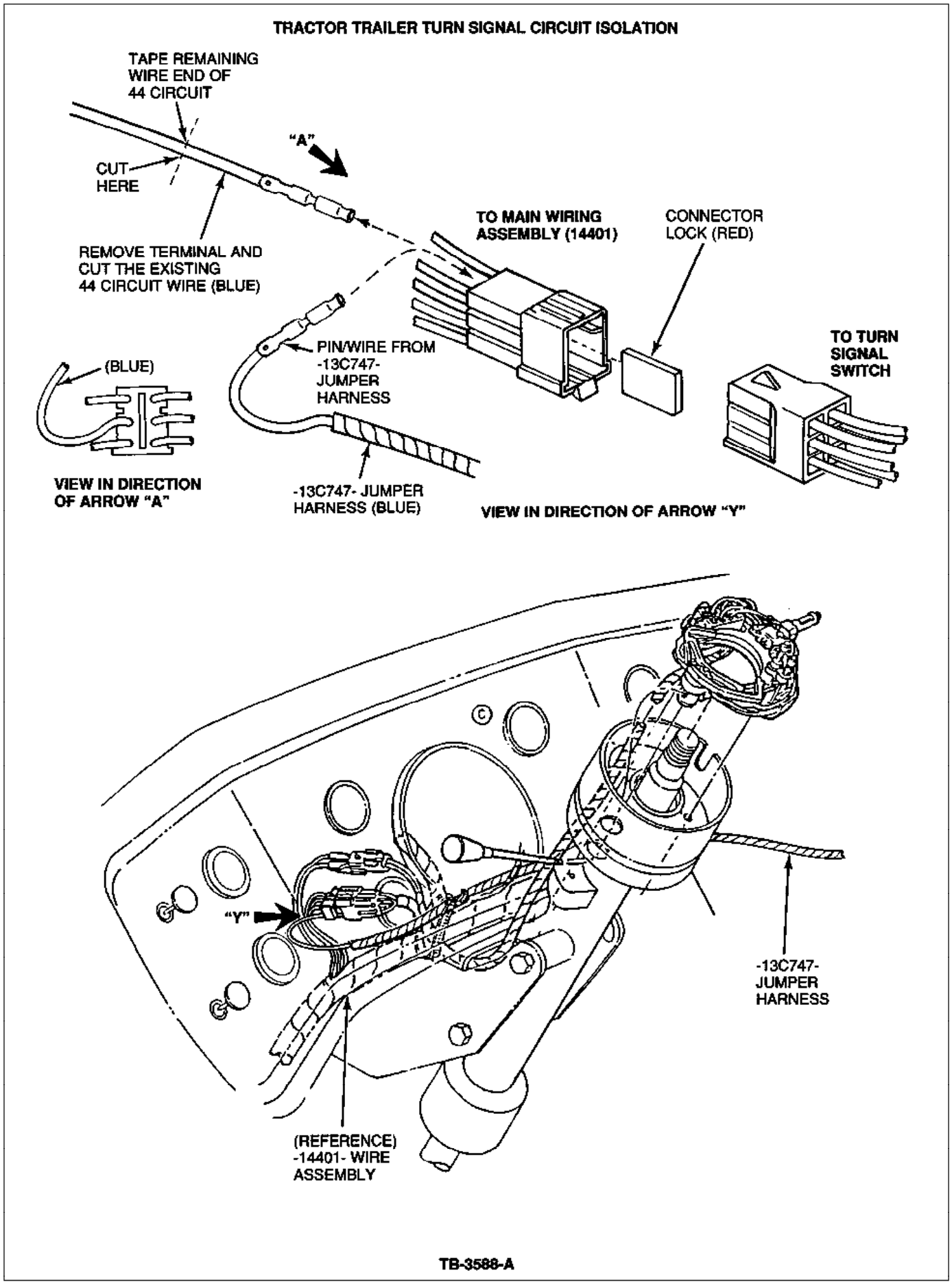

TRACTOR TRAILER TURN SIGNAL CIRCUIT ISOLATION
TAPE REMAINING WIRE END OF 44 CIRCUIT
"A"
CUT HERE
REMOVE TERMINAL AND CUT THE EXISTING 44 CIRCUIT WIRE (BLUE)
TO MAIN WIRING ASSEMBLY (14401)
CONNECTOR LOCK (RED)
TO TURN SIGNAL SWITCH
PIN/WIRE FROM -13C747- JUMPER HARNESS
(BLUE)
VIEW IN DIRECTION OF ARROW "A"
-13C747- JUMPER HARNESS (BLUE)
VIEW IN DIRECTION OF ARROW "Y"
"Y"
-13C747- JUMPER HARNESS
(REFERENCE) -14401- WIRE ASSEMBLY
TB-3588-A

Figure 2 - Article 95-5-30

2. Identify the connector to the turn signal switch which contains six (6) circuits.

   a. Disconnect the connector and remove Circuit 44 (blue) pin from the -14401- connector, by removing the red locking wedge and releasing the latching tine.

   b. Cut off the pin and tape the remaining wire end, Figure 2.

   NOTE:
   IF THE CONNECTORS NEED REPLACING, REFER TO THE PARTS LISTINGS FOUND AT THE END OF THIS ARTICLE FOR THE PROPER PARTS.

3. Insert the pin/wire from the (F4HZ-14A411-A) wiring assembly into the -14401- connector. Reconnect the connector halves.

4. Locate the turn signal flasher. If necessary, follow the wire from the circuit breaker panel back to the flasher, Figure 2.

   a. Remove the flasher from its present location and relocate it to a position next to the circuit breaker panel as shown in Figure 2.

   b. Use the same screws to attach the flasher.

5. Cut the wire presently connected to the flasher stud on the circuit breaker panel.

   a. Tape the cut wire end.

   b. Remove the existing eyelet from the stud and connect the eyelet from the (F4HZ-14A411-A) wiring assembly.

6. Using tie straps and/or tape, secure the (F4HZ-14A411-A) wiring assembly to the existing behind-the-panel harnesses.

OTHER APPLICABLE ARTICLES: NONE

SUPERSEDES: 94-15-23

WARRANTY STATUS: Eligible Under Basic Warranty Coverage

LABOR ALLOWANCE

DEALER CODING

OASIS CODES: 201000, 201200, 203000, 203200

95-5, ***Publication Date: MARCH 13, 1995***

Windshield Wiper - New Service Part	**Article No. 95-5-31**

MEDIUM/HEAVY TRUCK:
1980-94 L SERIES

ISSUE:
A wiper arm/blade assembly with improved spring durability has been released for service. The new wiper arm is the same as the wiper arm that went into production for 1995 except it does not contain the wet arm feature. The new arms are black. The originals were argent (grayish).

ACTION:
Replace the current arm/blade assembly with F5HZ-17526-B. Two (2) are required per vehicle.

NOTE:
REPLACEMENT BLADE ASSEMBLIES FOR THIS ARM ARE THE 1995 L-SERIES BLADE F5HZ-17528-A.

OTHER APPLICABLE ARTICLES: NONE

WARRANTY STATUS: INFORMATION ONLY

OASIS CODES: 202000

95-6, ***Publication Date: MARCH 27, 1995***

• **Paint - Iron Particle Removal - Industrial Fallout - Acid Rain Neutralization** • **Paint - Rough Texture/Ferrous Metal Contamination - Acid Rain Discoloration Or Etching**	**Article No. 95-6-1**

FORD:
1980 and after CROWN VICTORIA, ESCORT, MUSTANG, THUNDERBIRD
1982-88 EXP
1984-94 TEMPO
1986 and after TAURUS
1988-93 FESTIVA
1989 and after PROBE
1994-95 ASPIRE
1995 CONTOUR

LINCOLN-MERCURY:
1980 and after CONTINENTAL, COUGAR, GRAND MARQUIS, TOWN CAR
1981-87 LYNX
1984-92 MARK VII
1984-94 TOPAZ
1986 and after SABLE
1987-89 TRACER
1991-94 CAPRI
1991 and after TRACER
1993 and after MARK VIII
1995 MYSTIQUE

MERKUR:
1985-89 XR4TI
1988-89 SCORPIO

LIGHT TRUCK:
1980 and after F-150-350 SERIES
1981 and after ECONOLINE
1982 and after BRONCO
1983 and after RANGER
1984-90 BRONCO II
1986 and after AEROSTAR
1988 and after F SUPER DUTY
1991 and after EXPLORER
1993 and after VILLAGER
1995 and after WINDSTAR

MEDIUM/HEAVY TRUCK:
1980-91 C SERIES, CL-CLT-9000 SERIES
1980 and after F & B SERIES, L SERIES
1986 and after CARGO SERIES

ISSUE:
Ferrous metal particles (hot iron dust) are generated by manufacturing facilities, rail shipments, combustion engines, jet engines, body shops, etc. These particles mechanically/magnetically bond to vehicles' painted

surfaces. Moisture and temperature combine with the particles to create a chemical reaction. The reaction causes the particles to corrode and enter into the physical paint film.

ACTION:
To remove these particles/contaminants, USE ONLY the following procedure. The procedure must be performed before any buffing, polishing, color sanding or refinishing is attempted. The materials in this procedure are alkaline, acidic and neutral. They must be used in the specified order.

CAUTION:
ANY CHANGES TO THIS PROCEDURE WILL CAUSE AN INCOMPLETE OR UNSATISFACTORY REPAIR AND MAY RESULT IN POSSIBLE DAMAGE TO THE PAINTED SURFACES AND TRIM.

WARNING:
THE TECHNICIAN MUST WEAR PROTECTIVE CLOTHING AND EYE PROTECTION TO PREVENT SKIN IRRITATION.

CAUTION:
THE USE OF ANY OTHER PRODUCT OR PROCEDURE MAY CAUSE DAMAGE TO ALUMINUM, FLEXIBLE PAINTED SURFACES OR OTHER PAINTED SURFACES. FOLLOW DIRECTIONS EXACTLY AND RINSE THOROUGHLY AFTER EACH STEP.

NOTE:
THIS DECONTAMINATION PROCEDURE IS DESIGNED TO REMOVE SURFACE CONTAMINANTS FROM THE PAINT ON VEHICLES THAT HAVE BEEN CONTAMINATED UP TO 120 DAYS. VEHICLES WHICH HAVE EXPERIENCED THE CONDITION LONGER THAN THIS PERIOD MAY REQUIRE AN ADDITIONAL TREATMENT TO REMOVE FERROUS METAL CONTAMINANTS.

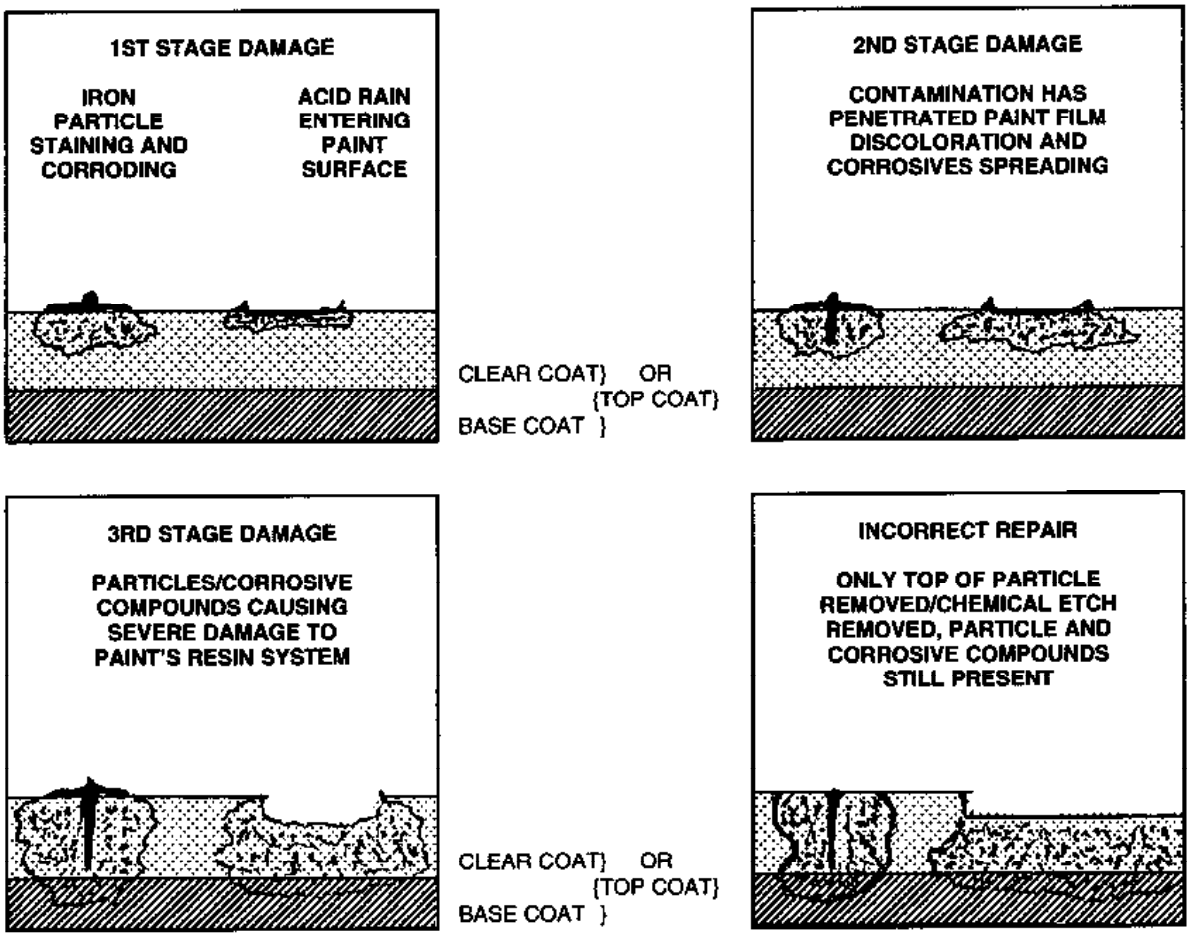
IDENTIFICATION

For ease of identifying, the Radio Shack Model 63-851, 30X, lighted, magnifier is recommended.

1. **Ferrous Metal**
   - Light colored vehicles: Small rust orange dots with black in center of stain.
   - Dark colored vehicles: Small white or silver dots with a "rainbow hue" around the particle. The surface will also feel rough to the touch.
2. **Industrial Fallout**
   - The surface feels rough to the touch and may exhibit crystalline deposits.
   - Usually ferrous metal is present, as well as water spots.
3. **Acid Rain**
   - Surface will exhibit irregular discolored spotting.
   - Dark colored vehicles will show cloudy or greying spots where the acids have started to etch away the paint.

NOTE:
IN EXTREME CASES ETCHING OF THE SURFACE WILL BE VISIBLE OR FELT.

INDUSTRIAL FALLOUT (IFO) is a general term used to identify Rail Dust, Brake Dust, Ferrous Metal, Alkaline/Crystalline Deposits, Water Spots, Acid Rain, and other types of Environmental Contamination.


1ST STAGE DAMAGE
IRON PARTICLE STAINING AND CORRODING
ACID RAIN ENTERING PAINT SURFACE
2ND STAGE DAMAGE
CONTAMINATION HAS PENETRATED PAINT FILM DISCOLORATION AND CORROSIVES SPREADING
CLEAR COAT} OR {TOP COAT}
BASE COAT }
3RD STAGE DAMAGE
PARTICLES/CORROSIVE COMPOUNDS CAUSING SEVERE DAMAGE TO PAINT'S RESIN SYSTEM
INCORRECT REPAIR
ONLY TOP OF PARTICLE REMOVED/CHEMICAL ETCH REMOVED, PARTICLE AND CORROSIVE COMPOUNDS STILL PRESENT
CLEAR COAT} OR {TOP COAT}
BASE COAT }

Studies conducted have shown the use of Oxalic Acid ferrous metal removers actually contribute to further damage of the paint's resin system, creating long term damage, which may not be evident for months. Additionally, Oxalic Acid products may damage soft exterior trim, aluminum trim and soften the paint.

The use of "clay" type products does not remove the entire ferrous particle or environmental contamination. Clay removes only the top of the particle and stain generated by the contamination, leaving the particle imbedded and the corrosive chemical compounds generated by the contamination in the paint system.

The particles and/or chemical compounds are still present and they continue to generate damage. Color sanding, buffing or compounding the paint film to remove ferrous metal, industrial fallout or acid rain damage may not remove the entire cause of the damage (they treat only the symptom and not the cause). The chemical compounds are still in the paint system and will continue to damage the paint. Color sanding and buffing may result in excessive removal of clear coat film. Removal of OEM clear coat in excess of 0.03 mil may contribute to premature clear coat failure and is not recommended.

THE DECONTAMINATION PROCEDURE DIRECTED IN THIS BULLETIN MUST BE PERFORMED BEFORE ANY BUFFING, POLISHING, COLOR SANDING OR REFINISHING IS ATTEMPTED.

TB-4187-A

Figure 1 - Article 95-6-1

DECONTAMINATION

Use Finish Kare Inc. products 1119/883/118SC to decontaminate the paint surface. Follow the manufacturer's recommended procedures.

NOTE:
FORD DOES NOT RECOMMEND THE USE OF OXALIC ACIDS OR OTHER "FALLOUT REMOVERS".

1. Rinse off dust and debris with cold water. Be sure to start at the bottom and work up.

2. Prepare product "1119" by mixing one (1) part "1119" with four (4) parts cold water.

3. Use clean wash mitt and apply mixture to entire car, **starting at the bottom and working up to the top surface.** Keep car wet with the solution for 5 to 10 minutes. **Do not allow product to dry on the car, and do not allow it to streak down the sides. Rewipe with mitt if necessary to avoid streaks.**

4. Rinse car with cold water.

5. Dry the flat surfaces of the vehicle hood, roof and deck lid.

6. Apply product "883" directly to the contaminated surfaces using a clean dry sponge, wash mitt, or soft truck brush **("883" is ready to use from the bottle, with no mixing involved).** Keep the areas wet with the "883" for 5 to 7 minutes. **Do not allow to dry on the car.** Wipe down to the body line on the sides.

7. Prepare product "118SC" by mixing 1 oz (0.03 L) with 1 gal (3.785 L) of water.

8. Shampoo the vehicle with "118SC" shampoo mixture using a clean wash mitt and then rinse with cold water.

   NOTE:
   DO NOT USE "118SC" MITT WITH "1119" OR "883" SOLUTIONS. USE SEPARATE MITTS AND ALWAYS KEEP THEM SEPARATE.

9. Inspect paint surface to see if rust particles have been removed. If rust particles have been on the vehicle for a long time, it may be necessary to repeat each of the above steps.

   NOTE:
   THE NEUTRALIZER CONCENTRATE IS A HEAVY DUTY SHAMPOO AND CAN BE USED IN AN AUTOMATIC CAR WASH SYSTEM.

CORRECTION OF SURFACE FOLLOWING DECONTAMINATION

1. Visually inspect surface for evidence of removal of ferrous metal particles, crystalline deposits and water spots. Acid rain discoloring or etching will require either buffing, color sanding or refinishing if etching is visible.

2. Use the buffing products from only one (1) manufacturer. Do not intermix products.

3. Always follow the manufacturer's product sequence. Use appropriate pads with each product as recommended by the manufacturer.

NOTE:
DO NOT REMOVE MORE THAN 0.3 OF A MIL OF PAINT MATERIAL, OR REPAINTING WILL BE REQUIRED.

4. Use a dual action sander (D/A Sander) with a velcro-mount backing plate and appropriate foam pad for final polishing swirl removal.

5. Use an alcohol and water mixture (1:4 ratio) to clean buffed areas to verify removal of scratches and swirls before application of final protective glaze.

NOTE:
FREQUENT WASHING OF VEHICLES IS IMPORTANT. CONTAMINANTS SETTLE ONTO THE VEHICLE EVERY DAY. USE CLEAN WATER (DEIONIZED, REVERSE OSMOSIS, ETC.) TWICE WEEKLY TO REMOVE HEAVY DUST, AND PARTICULATES. THE USE OF A NEUTRAL pH CAR WASH SOAP EVERY TWO (2) WEEKS IS RECOMMENDED TO NEUTRALIZE VEHICLE CONTAMINATION.

NOTE:
DEALERS SHOULD USE PROGRAM CODE R-23 AND CONDITION CODE C5 AND C6. REFER TO W & P MANUAL SECTION 5-1, PAGE 3.

OTHER APPLICABLE ARTICLES:

91-18-1

92-6-4

WARRANTY STATUS: Eligible Under The Provisions Of 12 Month/12,000 Mile Basic Warranty Coverage

LABOR ALLOWANCE

DEALER CODING

OASIS CODES: 106000

Bulletin Contents

TSB Article 95-6-20 has been superseded by Article 95-9-12.

Bulletin Contents

TSB Article 95-6-21 has been superseded by Article 95-11-17.

Bulletin Contents

TSB Article 95-7-2 has been superseded by Article 95-23-1.

95-7, ***Publication Date: APRIL 10, 1995***

Fuel Injection Pump - Bosch - Service Information For Ford/New Holland (FNH) 6.6L, 7.8L And Ford FD1060/1460 Midrange Diesel Engines	**Article No. 95-7-22**

MEDIUM/HEAVY TRUCK:
1986-95 CARGO SERIES, F & B SERIES, L SERIES

ISSUE:
There have been several requests from the field about the Bosch policies and procedures regarding "Unit Down" (Vehicle Off Road) (VOR) diesel fuel injection pump repairs on Ford vehicles. This TSB provides detailed information from Bosch regarding its policies and procedures on VOR repairs.

ACTION:
Refer to the following text for Bosch policies and procedures for VOR repairs.

The Bosch VOR system is an important element in providing prompt customer service. The system is used in the event specific service parts are not locally available to perform a repair for a "unit down" situation. The VOR system is provided only upon request. If it is not requested, then either the Bosch regular order (3 to 5 days) or rush order (48 hours) processes are used. To obtain VOR service, a Ford servicing dealer should communicate to the Bosch Diesel Service Dealer (DSD) the level of urgency or the time the injection pump is needed for installation on the engine. The DSD will then employ the VOR system if necessary.

BOSCH VOR POLICY AND PROCEDURE

- The VOR service is to be used in "unit down" repairs only.
- The quantities of parts ordered may be limited to one (1) repair.
- The VOR service charges will not be passed on to the Ford Dealer (the Ford dealer will not be charged any additional amount for the parts or repair of the injection pump when the VOR program is used).
- VOR orders will be shipped the same day if called in by 3:30 PM CST and the part is in the Atlanta Distribution Center.
- In the event the part is not available at the Atlanta Distribution Center, it will be obtained from an alternative source (DSD inventory, Bosch Germany, Charleston or Brazil). The VOR part will be shipped as soon as possible, however, in these cases Bosch cannot guarantee 24 hour service.

Ford Customer Service Division has requested and Bosch has implemented a 48 hour service by the Bosch DSD network. If an injection pump cannot be repaired and returned within two (2) working days, the Ford dealer can request an exchange pump. The exchange pump will be "Free of Charge" if the pump is still within the Bosch warranty (exchange pumps are subject to approval by Bosch). If the pump is out of Bosch warranty, the Ford dealer is to be charged for the exchange pump, but the cost is not to exceed the actual repair cost of the original pump.

For a fuel injection concern on a FNH or FD engine, the Ford dealer should perform the appropriate diesel engine diagnostic procedures and repair the system as required. When necessary, the Ford Heavy Truck Technical Hotline (800-826-4694) can be contacted for assistance in diagnosing and/or repairing hard to

resolve concerns. If the fuel injection pump is removed for service, the Ford dealer should provide the local Bosch DSD information on the engine symptoms and a time frame when the repaired injection pump is needed. The Bosch DSD will follow the previously stated policies to ensure the repair is completed promptly. If, however, there is a delay due to a technical or part availability issue, then the Ford dealer should first contact the Ford Heavy Truck Hotline for assistance. The Hotline will work with Bosch to help resolve the concern. If additional assistance is needed, the Ford dealer can work directly with Bosch by contacting Mr. Ray Chorostecki, Bosch Project Manager at (708) 865-5354 or Mr. Thomas Novak, Bosch National Sales Manager (708) 865-5260.

OTHER APPLICABLE ARTICLES: NONE

WARRANTY STATUS: INFORMATION ONLY

OASIS CODES: 404000, 601300, 602300, 603300, 617400, 618400

95-7, ***Publication Date: APRIL 10, 1995***

Air Cleaner - Availability Of New Service Kit For Retaining Plastic Air Cleaner Covers	Article No. 95-7-24

MEDIUM/HEAVY TRUCK:
1992-95 CARGO SERIES, F & B SERIES, L SERIES

ISSUE:
A new service kit for retaining the Diesel Engine plastic Air Cleaner Assembly Covers has been released for service.

ACTION:
If it becomes necessary to replace the retaining hardware of a plastic air cleaner assembly, use the new Air Cleaner Cover Hold-down Kit (F4HZ-9C629-A).The air cleaner cover hold-down kit includes the following:

- 1 (one) Thumb Screw
- 1 (one) Top Fastener Piece
- 1 (one) Bottom Fastener Piece
- 1 (one) Instruction Sheet

OTHER APPLICABLE ARTICLES: NONE

WARRANTY STATUS: INFORMATION ONLY

OASIS CODES: 404000, 499000

95-8, ***Publication Date: APRIL 24, 1995***

• **Wiper Motor - Replacement - Upgraded Service Kits** • **Windshield Wiper Motor - Upgraded Service Repair Kits**	**Article No. 95-8-2**

FORD:
1986-94 TEMPO
1987-91 CROWN VICTORIA
1987-93 MUSTANG, TAURUS
1989-92 PROBE
1989-93 THUNDERBIRD
1991-94 ESCORT

LINCOLN-MERCURY:
1986-94 TOPAZ
1987-89 TOWN CAR
1987-91 GRAND MARQUIS
1987-93 SABLE
1988-94 CONTINENTAL
1989-93 COUGAR
1991-94 TRACER
1993 MARK VIII

LIGHT TRUCK:
1987-94 BRONCO, F SUPER DUTY, F-150-350 SERIES

MEDIUM/HEAVY TRUCK:
1980-94 L SERIES
1988-95 F SERIES

This TSB is being republished in its entirety to include F-150-350 Series, Bronco, F-Super Duty and F/B-Series, revise application chart, and to include production dates for L-Series vehicles.

ISSUE:
A revised service windshield wiper motor is now available if the windshield wiper motor requires replacement.

ACTION:
Replace the wiper motor with a revised wiper motor and use a Windshield Wiper Motor Service Kit to complete the installation. Refer to the Application Chart listed in this article for the proper application. Follow the detailed instructions included in the service kit.

1. Inspect the vehicle to see if the new Wiper Motor (-17508-) is already installed. If so, the latest level of wiring is already installed and the Wiper Motor Wiring Kit (-14A411-) is not required.

2. Install a new Wiper Motor Assembly. Refer to appropriate Service Manual for installation details.

3. Use the Wiper Motor Wiring Kit (-14A411-) to complete the installation. The Wiring Kit (-14A411-) consists of:

    - One (1) Wiring and Connector Assembly

- Seven (7) 5/16" (8mm) Heat Shrink Tubing - 2" (51mm) long
- One (1) 37/63 (lead/tin) Solder 0.032" (0.80mm) diameter x 12" (305mm) long
- One (1) Adhesive Label
- Instruction Sheets

Not included in the kit is the Wiper Motor (-17508-).

OTHER APPLICABLE ARTICLES: NONE

SUPERSEDES: 94-11-20, 95-4-6

WARRANTY STATUS: INFORMATION ONLY

OASIS CODES: 202000

95-8, ***Publication Date: APRIL 24, 1995***

Radio - Two-Way Radio - Reduced Operating Range - Vehicles With Allison World Transmission (MD And HD Series)	Article No. 95-8-10

MEDIUM/HEAVY TRUCK:
1993-95 CARGO SERIES, F SERIES, L SERIES

ISSUE:
There may be concerns of reduced operating range of the Two-Way Radio on some vehicles equipped with Allison World Transmissions (MD and HD Series). This may be due to Radio Frequency Interference (RFI). The Allison electronic control system complies with all FCC and other guidelines regarding radio frequency emissions.

ACTION:
Refer to the following guidelines when installing a land mobile radio into a vehicle. These guidelines are intended to supplement, but not to be used in place of, detailed instructions supplied by the manufacturer of the land radio being installed. Most concerns of RFI may be eliminated when these installation guidelines are followed.

GENERAL GUIDELINES

TRANSMITTER LOCATION

1. The transreceiver for remote radios should be located away from other electronic devices and as near to the vehicle body side as possible.

2. One-piece transreceivers should be mounted under the instrument panel where they will not interfere with the vehicle's controls or passenger movement.

ANTENNA INSTALLATION

Each vehicle model and body style reacts to radio frequency differently. It is suggested that a magnetic mount antenna be used to check the proposed antenna mounting location for unwanted effects before the antenna is permanently installed. Antenna location is a major factor in these effects.

ANTENNA CABLE ROUTING

1. High quality coax (at least 95% shield coverage) should always be used and located away from all electronic modules.

2. Cable routing should be done to maintain a great distance between vehicle wiring and the feedline.

ANTENNA TUNING

It is important that the antenna be tuned properly and reflected power be kept to less than 10% (VSWR less than 2:1).

RADIO WIRING AND CONNECTION LOCATIONS

1. Both transreceiver power lead connections should be made directly to the battery. For one-piece transreceivers where the ignition switch is desired, a 12 volt contactor should be located at the vehicle battery with the coil of the contactor driven through an appropriate in-line fuse from an available ignition switch circuit which is not powered during cranking. Complete the contactor coil circuit by returning to battery negative.

2. Any negative lead from a handset or control unit must return to battery negative. It is preferable that the positive lead for a handset, or control unit positive and negative leads, be appropriately fused, separately from the transreceiver positive and negative leads.

WIRE ROUTING

The power and ground connections should be routed through the vehicle as far away as possible from any electronic modules.

TROUBLESHOOTING

Possible causes of unwanted vehicle RFI include:

a. Power leads connected to points other than the battery.

b. Antenna location.

c. Transreceiver wiring located too close to vehicle electronics.

d. Poor shielding or poor connections on antenna feed line.

OTHER APPLICABLE ARTICLES: NONE

WARRANTY STATUS: INFORMATION ONLY

OASIS CODES: 203000, 203200, 205000

95-9, ***Publication Date: MAY 8, 1995***

• **Battery Cover - Rattles Or Cracks - Vehicles Equipped With Outboard Frame-Mounted Batteries** • **Battery - Battery Cover Rattles Or Cracks - Vehicles Equipped With Outboard Frame-Mounted Batteries**	**Article No. 95-9-12**

MEDIUM/HEAVY TRUCK:
1988-95 CARGO SERIES, F & B SERIES, L SERIES

This TSB is being republished in its entirety to include L-Series vehicles with back of cab access package.

ISSUE:
The battery box may rattle or crack on some vehicles equipped with outboard frame-mounted battery boxes. This may be due to the cover latch bracket (spoon) bending downward and reducing the retention of the latch assembly. The reduced retention may allow the battery box cover to rattle, which on some vehicles may cause the cover to crack.

ACTION:
Install a new more robust latch bracket (spoon) to the battery box cover in a new location to increase tension. If the battery box cover is cracked, install a new battery box cover with a new more robust latch bracket installed on the cover. Refer to the following Service Procedures for details.

SERVICE PROCEDURES

COVER LOOSE, BUT NOT CRACKED

1. Remove the battery box cover and drill out the two (2) rivets which retain the spoon to the cover. Remove the spoon and discard.

2. Install the new Spoon (F5HZ-10A784-A) using the upper battery cover latch hole as the lower hole on the new latch. This will raise the position of the spoon location on the box cover.

3. Install the spoon using one (1) 1/4x1/2 Blind Pop Rivet (372820-S36 or equivalent) as described in Step 2.

4. Properly align the spoon on the box cover and drill out the new top hole location in the box cover through the spoon.

5. Install the Upper Pop Rivet (372820-S36 or equivalent) and reinstall the cover to the battery box.

BATTERY BOX COVER CRACKED

1. For vehicles with a cracked cover, a new cover assembly may be installed. Refer to the following Battery Box Application Chart for the proper application.

2. Remove the old cover assembly and replace it with a new cover assembly. The new cover will include the new latch in the revised location.

OTHER APPLICABLE ARTICLES: NONE

SUPERSEDES: 95-6-20

WARRANTY STATUS: Eligible Under Basic Warranty Coverage

LABOR ALLOWANCE

DEALER CODING

OASIS CODES: 203000, 305000

95-9, ***Publication Date: MAY 8, 1995***

Reduced Power - Vehicles With FD1060 (190 Horsepower) Engine And Allison Automatic Transmission	**Article No. 95-9-13**

MEDIUM/HEAVY TRUCK:
1992-94 CARGO SERIES, F & B SERIES, L SERIES

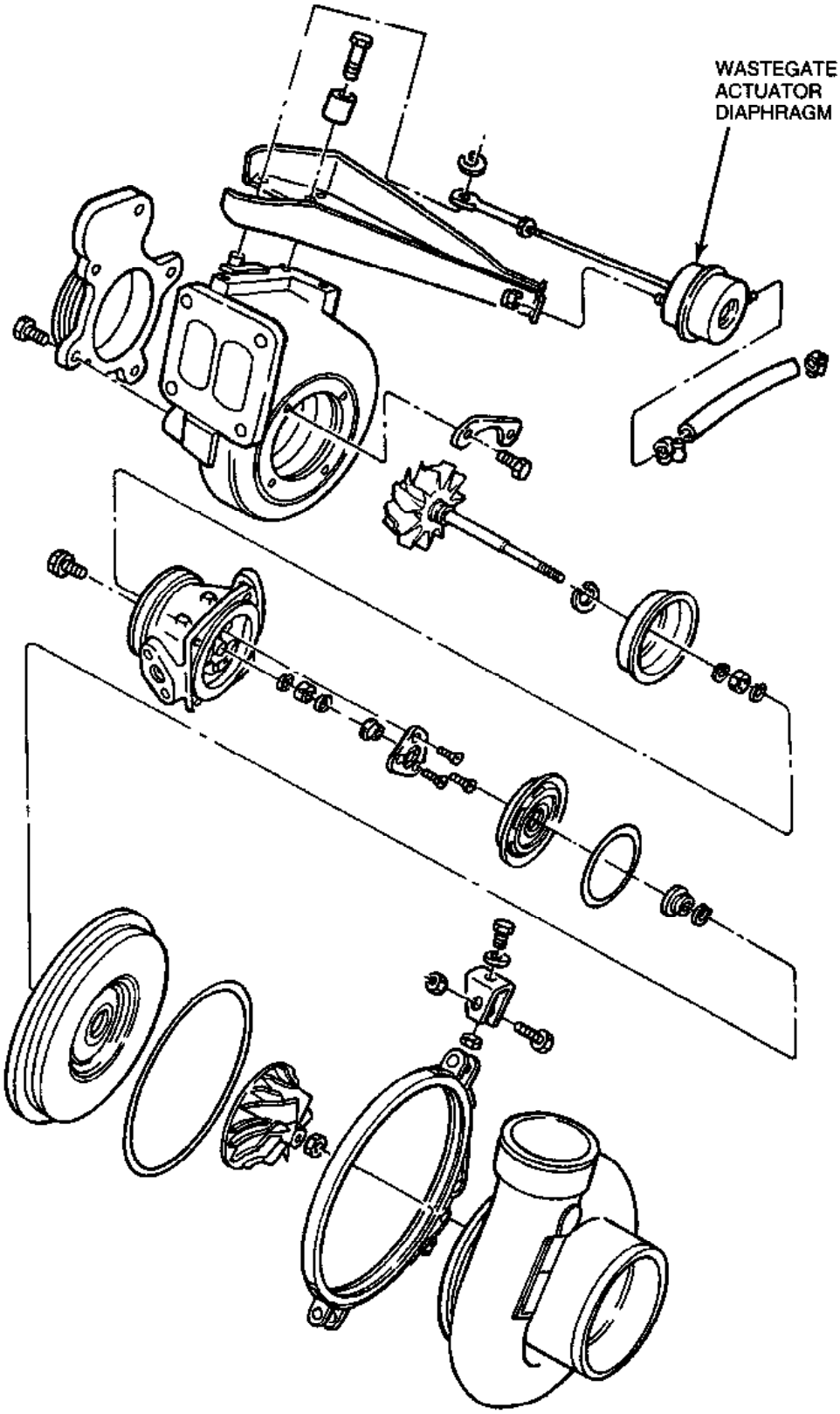
ISSUE:
Some vehicles equipped with FD1060 engine (190 Horsepower) and Allison Automatic Transmission may exhibit reduced power even after performing TSB «94-3-11». This may be due to the use of a non-wastegated turbocharger on these engines.

ACTION:
If after performing TSB 94-3-11 a reduced power concern still exists, replace the non-wastegated turbocharger with a wastegated turbocharger. Refer to the following Service Procedure for details.

SERVICE PROCEDURE

1. Verify the vehicle complies with the concern description, engine horsepower and model year. Follow the service procedures outlined in TSB 94-3-11. If the reduced power concern still exists, proceed to Step 2.

2. Visually inspect the turbocharger and verify it is wastegated (Item 9 in Figure 1 shows the wastegate actuator diaphragm). If the turbocharger is not wastegated, replace the turbocharger with a wastegated Turbocharger (F3HZ-6K682-ARM). Refer to the appropriate Service Manual, Section 03A-04B for removal and installation procedures. The new turbocharger comes with a new mounting gasket, studs and nuts. Additionally, an Oil Return Line Gasket (F3HZ-6N652-B) is required.



TB-4222-A

Figure 1 - Article 95-9-13

OTHER APPLICABLE ARTICLES:

94-3-11

WARRANTY STATUS: Eligible Under Basic Warranty Coverage

LABOR ALLOWANCE

DEALER CODING

OASIS CODES: 614000, 614500

95-9, ***Publication Date: MAY 8, 1995***

Caterpillar 3406 PEEC - Main Drive Belt Rolls Off - Fan Drive Belt Misalignment	Article No. 95-9-14

MEDIUM/HEAVY TRUCK:
1994-95 L SERIES

ISSUE:
The main drive belt may experience early wear and/or the drive belt may roll off the fan hub on some vehicles. This may be due to an interference between the fan hub mounting surface and an engine noise shield mounting bolt causing the fan clutch pulley to not be parallel to the front of the engine.

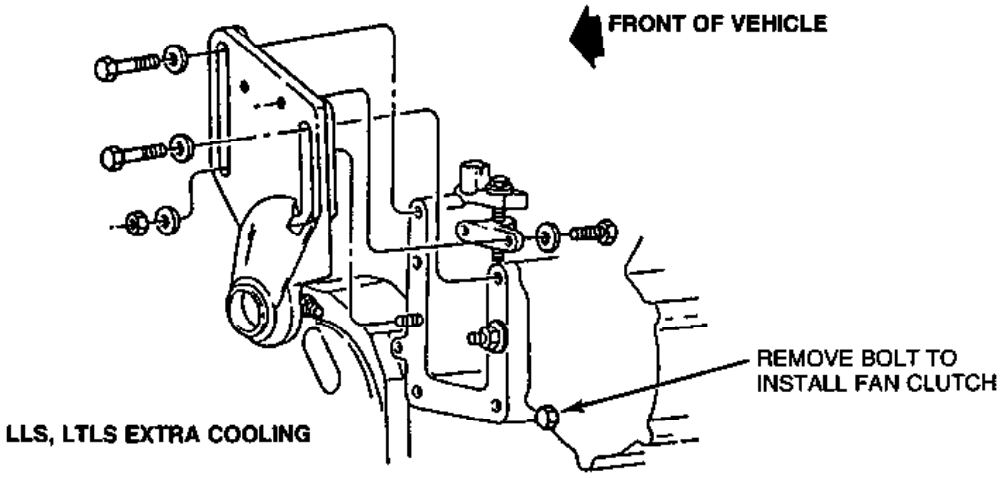
ACTION:
Replace the main drive belt and remove a bolt which is causing the interference between the fan hub mounting surface and the engine noise shield. Refer to the following Service Procedure for details.

SERVICE PROCEDURE

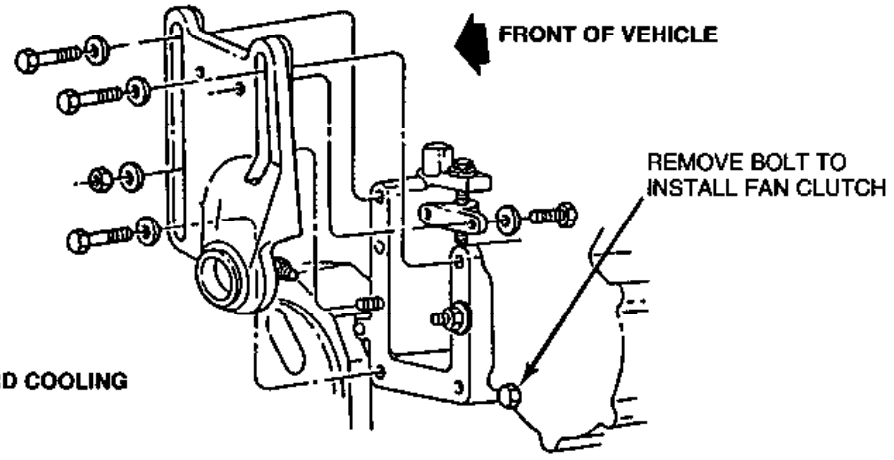
1. Loosen the generator mounting fasteners, and loosen the adjusting nuts enough to remove the V-belts from the generator. Refer to the Service Manual, Section 14-02C.

2. Remove the fan clutch assembly. Refer to Service Manual, Section 03C-05. Remove and discard the 14-rib polygroove drive belt.

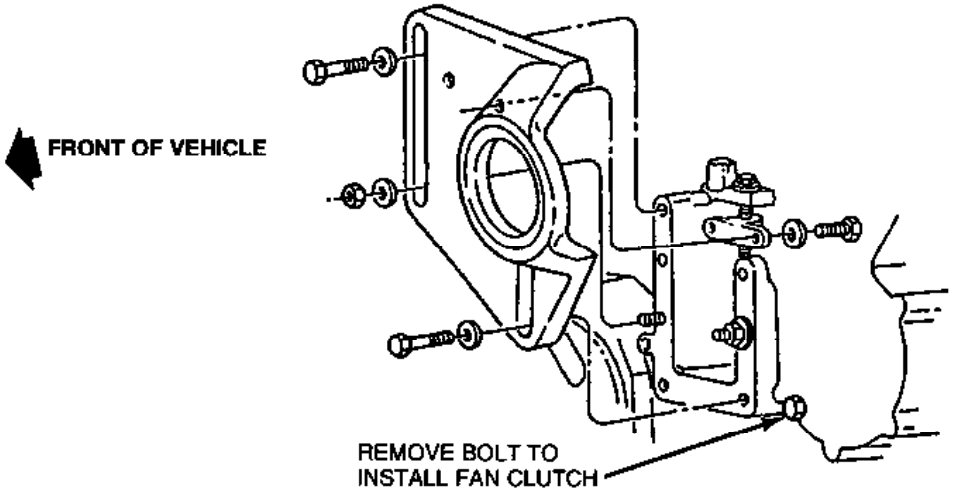
3. Locate the engine noise shield mounting bolt which is causing the interference. Refer to Figure 1. Remove and discard the bolt.



LLS, LTLS EXTRA COOLING



LLS, LTLS STANDARD COOLING



L-SERIES (INCLUDING LL AND LTL)

TB-4198-A

Figure 1 - Article 95-9-14

4. Replace the main drive belt. Refer to the Application Chart for the correct belt. Reinstall the fan clutch and install the mounting bolts finger tight. Adjust the clutch to obtain 1245-1557 Newtons (N) (280-350 Pounds Force (lb)) on the main drive belt. Torque the mounting bolts to 102-142 N-m (75-105 lb-ft).

5. Reinstall the generator drive belts, adjust the generator to achieve 400-490 Newtons (N) (90-110 Pounds Force (lb)) on the belts. Tighten the jam nuts on the adjusting link. Torque the generator mounting nut to 102-142 N-m (75-105 lb-ft).

6. Start the engine and allow it to run for 10 minutes. Stop the engine and recheck the drive belt tension. If the belt tension has dropped below 934 Newtons (N) (210 Pounds Force (lb)), readjust the fan clutch to obtain 1112-1156 Newtons (N) (250-260 Pounds Force (lb)).

OTHER APPLICABLE ARTICLES: NONE

WARRANTY STATUS: Eligible Under Basic Warranty Coverage

LABOR ALLOWANCE

DEALER CODING

OASIS CODES: 206000, 303000, 402000, 497000

95-10, ***Publication Date: MAY 22, 1995***

Brakes - Hydraulic - Hydromax Brake Reservoir Mounting Bracket Separation - Vehicles Equipped With Hydraulic Brakes And FD1060 Engine	**Article No. 95-10-13**

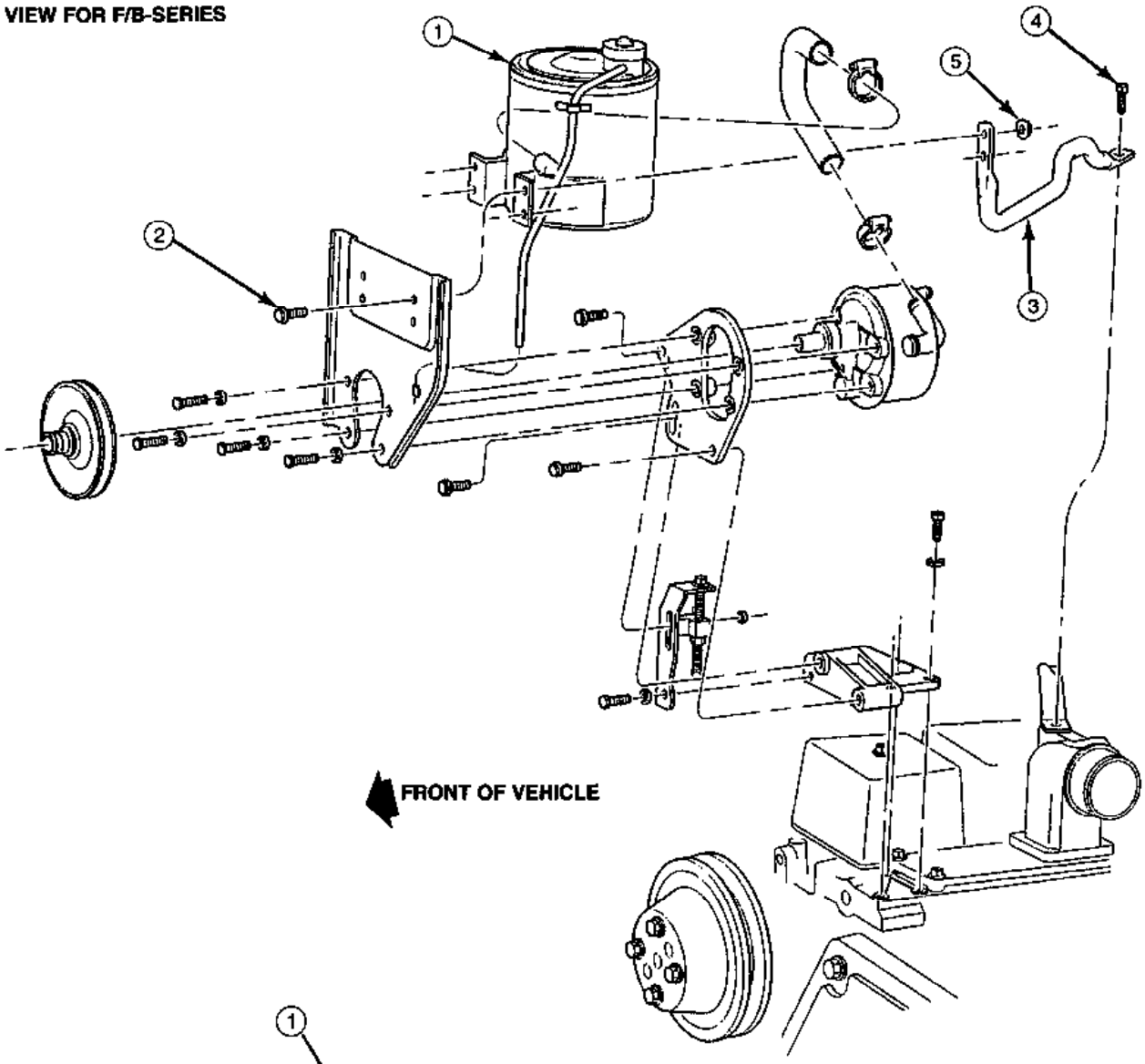
MEDIUM/HEAVY TRUCK:
1995 F & B SERIES, L SERIES

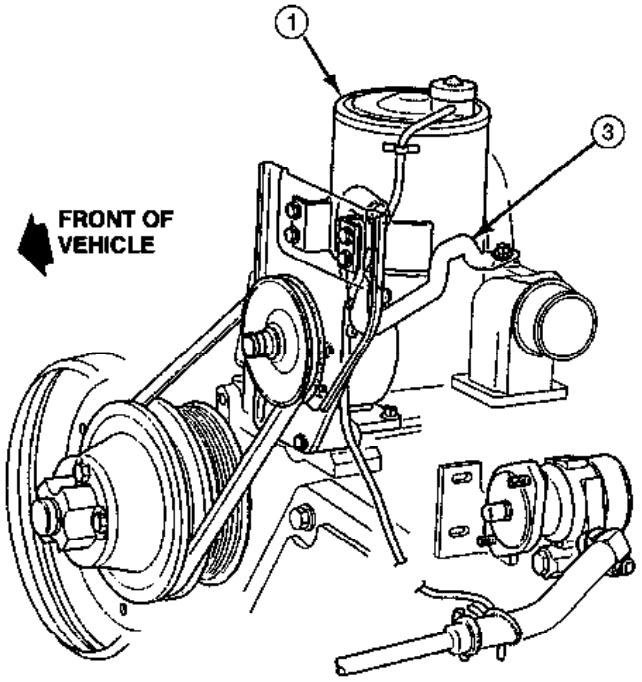
ISSUE:
A Hydromax brake reservoir mounting bracket separation concern may occur on some vehicles. The separation occurs where the reservoir mounting brackets are welded to the reservoir. Seepage of automatic transmission fluid may appear at the separated area, resulting in low fluid level in the brake power assist system. A low fluid level would activate the electric brake assist motor, which actuates the "BRK ELEC MTR" (brake electric motor) warning lamp and a buzzer would sound. These symptoms are caused by varying vibration between subject models, resulting in early reservoir bracket separation on some and no bracket separation on others.

ACTION:
Install a tubular support bracket which attaches to the engine cylinder head and hydraulic reservoir brackets. Refer to the following Service Procedure for details.

SERVICE PROCEDURE

1. Remove the Hydromax Brake Reservoir (Item 1, Figures 1 and 2). Discard the reservoir, four (4) nuts and two (2) of the bolts. Install a new Hydromax Brake Reservoir (F5HZ-2N148-A, F/B-Series and F3HZ-2N148-A, LN-Series) using two (2) of the existing bolts on the right side with two (2) new torque prevailing 5/16-18 Grade 5 nuts (33770-S2) (Item 5, Figures 1 and 2). Torque nuts from 16-23 N-m (12-17 lb-ft).

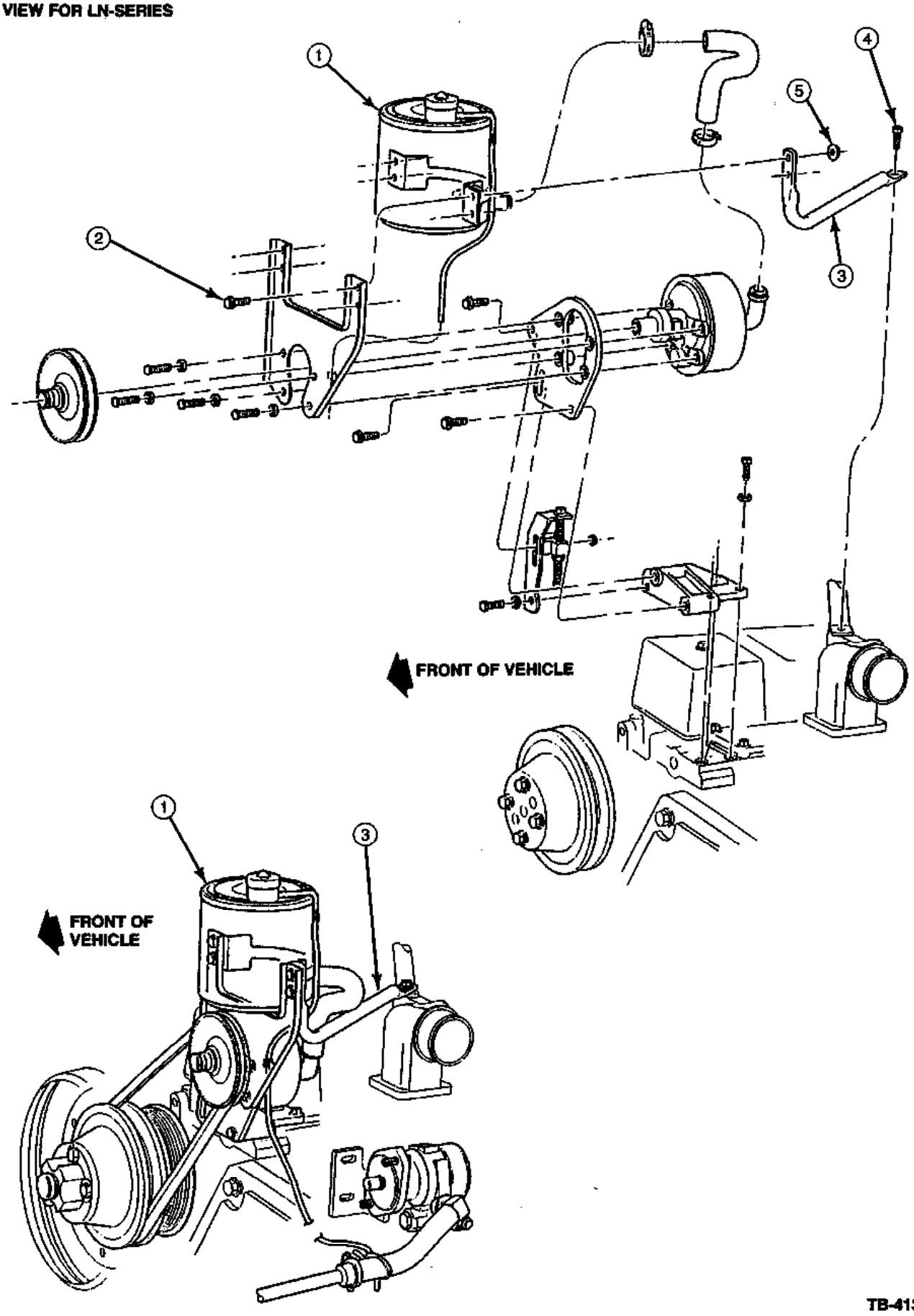

VIEW FOR F/B-SERIES
1
2
3
4
5
FRONT OF VEHICLE


1
3
FRONT OF VEHICLE

TB-4136-

Figure 1 - Article 95-10-13

VIEW FOR LN-SERIES



TB-4137-A

Figure 2 - Article 95-10-13

2. For F/B-Series, remove the bolt (Item 4, Figure 1) from the engine cylinder head charge air tubing casting, which retains the -9A627- air cleaner bracket. Discard bolt. LN-Series vehicles do not have a bolt in this location.

3. Install the Tubular Support Bracket (Item 3, Figures 1 and 2) (F5HZ-2K017-BB, F/B-Series and F5HZ-2K017-AB, LN-Series) to the reservoir and reservoir mounting bracket. Use two (2) new 5/16x18x1.00" Grade 5 flanged bolts (376256-S) (Item 2, Figures 1 and 2) and two (2) new torque prevailing 5/16x18 Grade 5 flanged nuts (33770-S2) (Item 5, Figures 1 and 2). Torque nuts from 16-23 N-m (12-17 lb-ft).

4. For F/B-Series and LN-Series:

   a. **F/B-Series**: Install a M10x1.5x25mm P/C 9.8 hex head bolt (N605545-S100) (Item 4, Figure 1) to secure the tubular bracket over the air cleaner support bracket to the charged air cooling casting. Torque bolt from 41-62 N-m (30-46 lb-ft).

   b. **LN-Series**: Install a M10x1.5x20mm P/C 9.8 hex head bolt (N605544-S2) (Item 4, Figure 2) through the tubular support bracket directly to the charged air tubing casting. Torque bolt from 41-62 N-m (30-46 lb-ft).

5. Fill and bleed the Hydromax system to the proper level using Motorcraft Mercon or equivalent. Refer to the appropriate Service Manual, Section 06-05B, for proper fill and bleeding procedure.

OTHER APPLICABLE ARTICLES: NONE

WARRANTY STATUS: Eligible Under Basic Warranty Coverage

LABOR ALLOWANCE

DEALER CODING

OASIS CODES: 301000

95-10, ***Publication Date: MAY 22, 1995***

Brakes - Air Over Hydraulic - Supplemental Diagnostic Procedures	Article No. 95-10-14

MEDIUM/HEAVY TRUCK:
1986-89 CARGO SERIES

ISSUE:
Diagnostic and repair service information concerns for air over hydraulic brake systems may occur for some vehicles. The following diagnostic procedures are intended to supplement the information published in the 1986-89 Cargo Truck Service Manual.

ACTION:
Please refer to the following Sections for service details.

CONTENTS

SECTION I

INSPECTION PROCEDURE

SECTION II

PRESSURE DIFFERENTIAL VALVE ASSEMBLY DIAGNOSTIC AND REPLACEMENT

SECTION III

DIFFERENTIAL VALVE FUNCTIONAL CHECK

SECTION I

INSPECTION PROCEDURE

- HYDRAULIC LEAK TEST
- FLUID LEVEL CHECK

HYDRAULIC LEAK TEST

1. With the parking brake applied, visually inspect all hydraulic lines, connections and hoses for evidence of leaks. Replace leaking parts as necessary. Specifically, inspect the area of the pressure differential valve noting any leakage of fluid from the valve or the switch. Inspect the frame rail for missing paint due to valve leakage. If leakage is evident, go to SECTION II (valve replacement). This valve is located inside the right frame rail, close to the alternator.

2. Check the brake piston seals or rear drum brake wheel cylinders for evidence of leaks. Replace as needed.

3. Inspect all fittings and connections for leaks. Tighten fittings and replace O-rings as needed.

FLUID LEVEL CHECK

CAUTION:
FAILURE TO OBSERVE ALL PRECAUTIONS PREVENTING CONTAMINATION OF THE BRAKE SYSTEM WILL RESULT IN DETERIORATION OF RUBBER PARTS, LEADING TO REDUCED BRAKE PERFORMANCE.

4. With hood open, before removing filler caps, wipe off the outside of fill cap with a clean, dry cloth to prevent contaminants from getting into reservoir when filler caps are removed.

NOTE:
THERE ARE TWO (2) MASTER CYLINDERS ON THESE VEHICLES.

5. Remove the filler caps from the master cylinder.

6. Check and fill if necessary, to the level of the bottom of the rings as indicated on the master cylinder reservoir(s). Use new DOT 3 brake fluid from a sealed container.

CAUTION:
NEVER USE BRAKE FLUID WHICH HAS BEEN DRAINED FROM THE HYDRAULIC SYSTEM OR THAT HAS BEEN STORED IN AN OPEN CONTAINER.

7. Replace the master cylinder filler caps.

SECTION II

PRESSURE DIFFERENTIAL VALVE ASSEMBLY DIAGNOSTIC AND REPLACEMENT

BRAKE WARNING LAMP SYSTEM TEST

NOTE:
WHEN BOTH BRAKE SYSTEMS ARE FUNCTIONING NORMALLY, EQUAL PRESSURE ON BOTH SIDES OF THE PRESSURE DIFFERENTIAL VALVE WILL KEEP THE VALVE CENTERED DURING BRAKE PEDAL APPLICATION. THE BRAKE WARNING LAMP WILL ILLUMINATE ONLY WHEN THE IGNITION KEY IS IN THE START POSITION AND WILL GO OUT AFTER APPROXIMATELY 1/2 SECOND.

1. Turn the ignition switch to ACC or ON. The red brake warning lamp should be off. If the lamp remains on, go to Step 7.

2. Turn the ignition switch to start. The warning lamp should illuminate for approximately 1/2 second. If the red brake warning lamp does not illuminate, check the lamp bulb and replace if necessary, then recheck. If lamp illuminates and flashes for approximately 1/2 second and then goes out, the warning system is functioning properly, go to SECTION III. If not, continue with next step.

3. If the brake warning lamp still does not illuminate after the bulb has been replaced, simulate pressure not being equal in both brake systems by disconnecting the red secondary delivery line on the foot valve (Figure 2, Item 1). Apply and release the brakes. This should cause the piston in the valve to shuttle over and make contact with the switch, causing the lamp to come on.

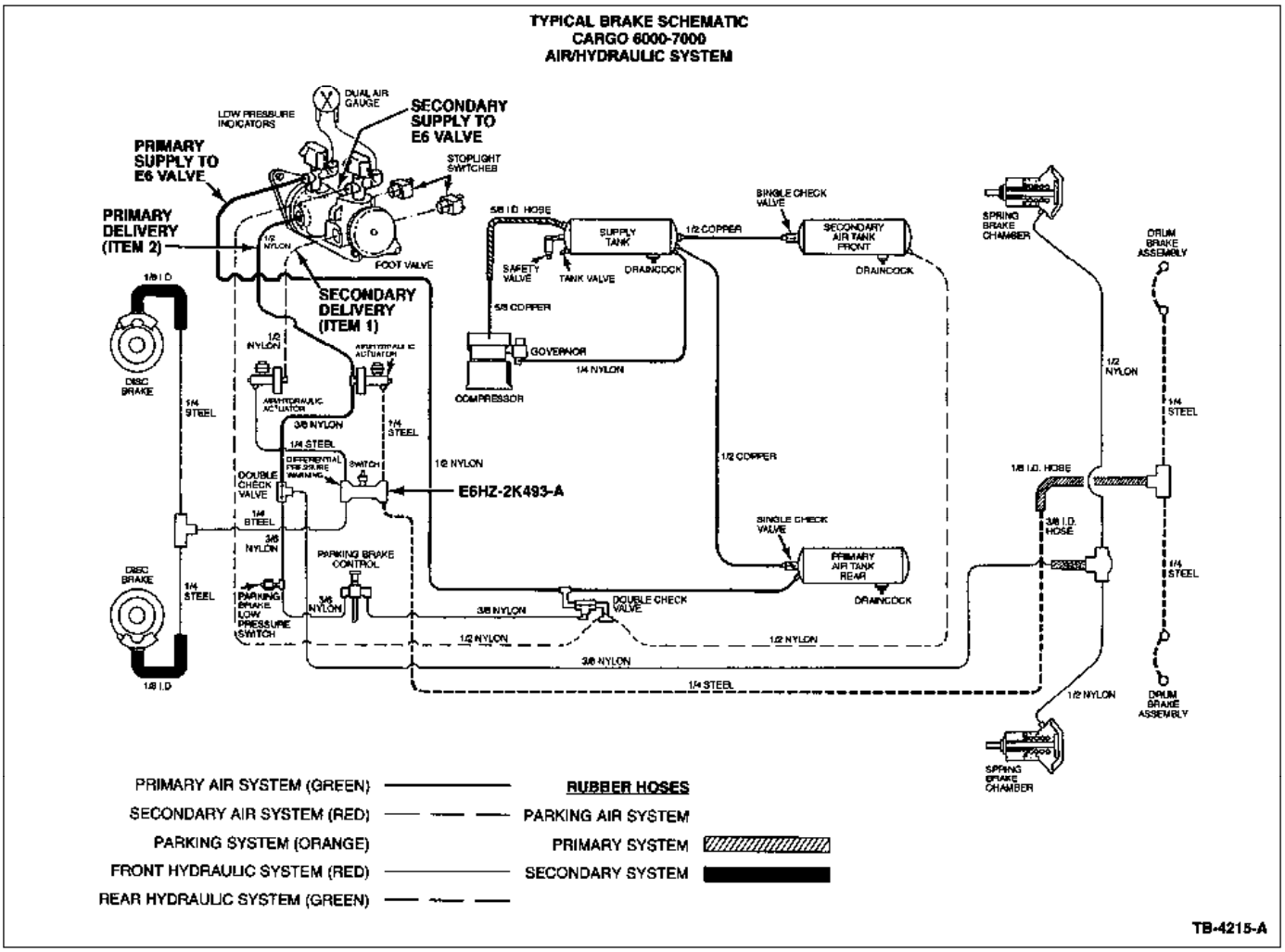


Figure 2 - Article 95-10-14

4. If the brake warning lamp does not illuminate when pressure is not equal in both brake systems, the warning switch may be inoperative or the switch-to-lamp wiring may have an open circuit.

5. Remove the switch, ground the metal collar on the switch and push in center pin. If lamp illuminates, switch is good. If the warning lamp does not illuminate, replace the switch. If replacement of the switch does not cause the warning lamp to illuminate, check the wiring. If it still fails to illuminate, replace the Differential Pressure Valve Assembly (E6HZ-2K493-A). Refer to Step 6 for installation, then proceed to SECTION III.

NOTE:
IF THE VALVE IS NOT REPLACED IN STEP 5, RE-CENTER THE VALVE BY USING THE PROCEDURE IN SECTION III, STEP 3.

6. Following are removal and installation procedures for Differential Pressure Valve Assembly.

Removal (Refer to Figure 1)

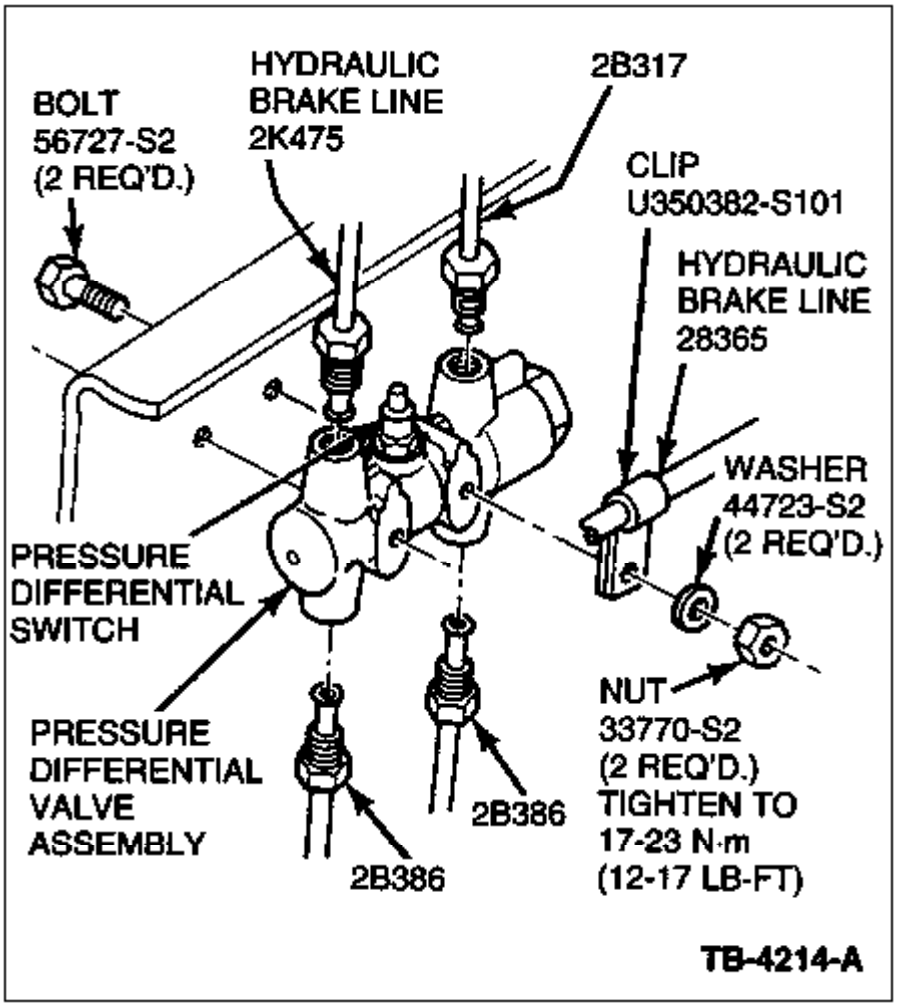


Figure 1 - Article 95-10-14

a. Disconnect electrical connector at pressure differential switch.

b. Clean dirt from around hydraulic line fittings. Allow hydraulic fluid to drain into a suitable container.

c. Remove clip which secures hydraulic line (routed from T-fitting) at pressure differential valve assembly. When positioning this, or any, hydraulic line aside, take care not to bend or crimp.

d. Remove nut and washer from retaining attaching bolt. Withdraw both bolts and remove pressure differential assembly.

Installation (Refer to Figure 1)

a. Position pressure differential assembly on frame side rail and install forward bolt.

b. Install remaining attaching bolt, securing hydraulic line and clip at pressure differential assembly.

c. Install line fittings to pressure differential assembly.

d. Tighten pressure differential assembly attaching bolts to 17-23 N-m (12-17 lb-ft).

e. Tighten hydraulic line fittings to 17-23 N-m (12-17 lb-ft).

f. Connect electrical connector at pressure differential switch.

g. Fill reservoirs with Ford Heavy Duty Brake Fluid C6AZ-19542-AA or -BA (ESA-M6C25-A) or an equivalent DOT 3 fluid to fill mark and bleed system.

7. If the brake warning lamp remains on after Step 1, there may be a shorted or broken switch, grounded switch wires, or an non-centered pressure differential valve. Remove the switch from the valve. If the lamp remains on, check the wiring for a ground. If the lamp goes out, check the switch and replace if necessary. Reinstall the switch in the valve body. If the lamp comes on again, the valve is not centered.

8. Re-center the valve by disconnecting the red supply line and very slowly applying the brake. If the lamp goes out, reconnect the supply line and go to SECTION III, Step 3. If the lamp stays on, reconnect the red supply line and disconnect the green line. Again, slowly apply the brake. If the lamp goes out, reconnect the supply line and go to SECTION III, Step 3.

SECTION III

DIFFERENTIAL VALVE FUNCTIONAL CHECK (After Replacement of Valve)

1. Again, simulate unequal pressure by disconnecting the secondary delivery line on the foot valve (Figure 2, Item 1). With ignition on, apply the brakes. This should cause the piston to shuttle over and allow contact between the piston and switch. This contact should cause the lamp to illuminate. Illumination of lamp indicates the differential pressure valve system is functioning properly.

2. Reconnect the red delivery line (Figure 2, Item 1) and loosen the green primary delivery line (Figure 2, Item 2). Very slowly apply the brake until the lamp goes out. This action forces the piston to shuttle in the opposite direction, centering it in the valve body. If too much pressure is applied, the piston will shuttle too far and the lamp will remain on. The procedure to re-center the piston will have to be reversed. Reconnect green line (Figure 2, Item 2) and tighten.

3. Last check is with the ignition in the ACC or ON position; the brake warning lamp should be off. In the start position, the warning lamp should be on for approximately 1/2 second. With the ignition switch in the ON position, step on the brake pedal. The warning lamp should remain off. If the warning lamp comes on again, the brakes may be out of adjustment or a leak exists that was not identified in SECTION I. Once this condition is corrected, the valve will have to be re-centered.

4. After this procedure is done and valve is functioning properly, the General Inspection Procedures should be done to check the brake system functionality, refer to Cargo Service Manual, Section 12 - Brakes, Air/Hydraulic Brakes.

OTHER APPLICABLE ARTICLES: NONE

WARRANTY STATUS: INFORMATION ONLY

OASIS CODES: 301000

95-10, ***Publication Date: MAY 22, 1995***

Air Conditioning - Availability Of Conversion Kits To Convert Systems Using R-12 To R-134A	**Article No. 95-10-16**

MEDIUM/HEAVY TRUCK:
1985-91 C SERIES, CL-9000
1985-94 F & B SERIES, L SERIES
1986-94 CARGO SERIES

ISSUE:
Conversion kits are available to convert systems using R-12 refrigerant to R-134a refrigerant.

ACTION:
If it becomes necessary to convert A/C systems using R-12 refrigerant to R-134a refrigerant, refer to the following for details.

RPO A/C R-12 TO R-134a CONVERSION

It is important to note the following when converting R-12 systems to R-134a systems.

- This process will permanently convert a factory installed R-12 A/C system to an R-134a system. Once converted, the system cannot be converted back to an R-12 system.
- It is recommended that all R-12 systems be repaired using R-12 whenever possible.
- If R-12 is not available, the system must be converted to an R-134a system.
- R-12 "substitutes" are NOT recommended or approved. Conversion to R-134a is the only acceptable method of updating an R-12 system.

PROCEDURE

An RPO A/C system conversion requires two (2) parts:

- Order an R-12 to R-134a conversion kit from the following Application Chart. One (1) kit will be needed for each vehicle converted. A complete instruction sheet is included with each conversion kit.
- A new accumulator or receiver/drier must also be ordered. Replace the current accumulator with a new accumulator of the same part number.
- L-Series vehicles built prior to the 1991-1/2 model year used a receiver/drier instead of an accumulator. Replace the current receiver/drier with a new receiver/drier chosen from the following chart.

NOTE:
R-134a REFRIGERANT AND CHARGE EQUIPMENT WILL BE REQUIRED.

For L-Series vehicles built prior to the 1991-1/2 model year (December 1991), replace the receiver/drier with an R-134a compatible receiver/drier (see chart below). All other vehicles have R-134a compatible components.

SLEEPER HEATER A/C UNITS

- Sleeper evaporator cores are located beneath the bunk in the luggage compartment area. All R-12 evaporator cores are "Box" shaped units and all R-134a evaporator cores are "Wedge" shaped units.
- R-12 "Box" evaporators can be made R-134a compatible by changing the Thermal Expansion Valve (TXV) IN ADDITION TO ALL CHANGES RECOMMENDED TO THE BASE RPO SYSTEM.
- The old R-12 TXV (Red Dot part number RD-4157-0) should be replaced with a 1-1/2 ton R-134a TXV (part number RD-5-7125-0) available directly from Red Dot.

Red Dot Corporation

P.O. Box 58270

Seattle, Washington 98138

Telephone: (206) 575-3840

IN CAB KYSOR KA700 SIDEKICK A/C UNITS

- Existing R-12 KA700 units can be made R-134a compatible by replacing the Thermal Expansion Valve (TXV). The KA700 R-12 TXV (Kysor part number 404098) should be replaced with a Kysor R-134a TXV (part number 404255) available directly from Kysor.

Kysor/Westran

602 East Blackhawk Drive

Byron, Illinois 61010-0921

Telephone: (815) 234-2811

OTHER APPLICABLE ARTICLES:

93-5-16

WARRANTY STATUS: INFORMATION ONLY

OASIS CODES: 208000, 208200

Bulletin Contents

TSB Article 95-10-17 has been superseded by Article 95-13-9.

95-10, ***Publication Date: MAY 22, 1995***

Engine - FD1060 Diesel - Crankshaft Damper Service Parts Clarification	**Article No. 95-10-18**

MEDIUM/HEAVY TRUCK:
1992-95 CARGO SERIES, F & B SERIES, L SERIES

ISSUE:
There may be some concerns over the correct part application regarding FD1060 Diesel engine crankshaft dampers. This article provides the correct part applications and identification.

ACTION:
If service is required for the FD1060 engine, install the correct part per the Application Chart. Refer to the following for correct applications.

PRODUCTION AND SERVICE PART APPLICATION

The FD1060 engine can use either a rubber or viscous crankshaft damper, depending on the type of transmission that is used.

All vehicles equipped with the Allison AT-545 automatic transmission will use a rubber-type damper (F3HZ-6312-B). The AT-545 transmission design allows it to dampen the engine vibration/noise similar to what a viscous damper would, therefore allowing the use of the rubber crankshaft damper.

All other transmissions, manual and automatic use a viscous damper (F3HZ-6312-G). During the early build period of the FD1060 engine, two (2) different styles of crankshaft dampers and adapters were used. However, all service replacement viscous crankshaft dampers and adapters will be the latest level (F3HZ-6312-G damper, F3HZ-6A329-A adapter).

Some early production FD1060 engines that were to be equipped with the viscous crankshaft damper, were instead built with a rubber crankshaft damper. If the engine serial number (the serial number is located on the engine data plate, which is attached to the front gear housing) is between 44726807 and 44731926, and the vehicle is equipped with a transmission other than the AT-545, then it probably has the incorrect rubber damper. Use of the rubber damper in applications that require a viscous damper can increase the noise level of the engine. If a particular engine is within the serial number range and there is a concern with the engine noise level, the original crankshaft damper should be replaced with the viscous damper.

PART IDENTIFICATION

The rubber damper assembly is one-piece. The viscous damper assembly consists of three (3) separate pieces: damper, adapter and drive belt pulley (Figure 1).

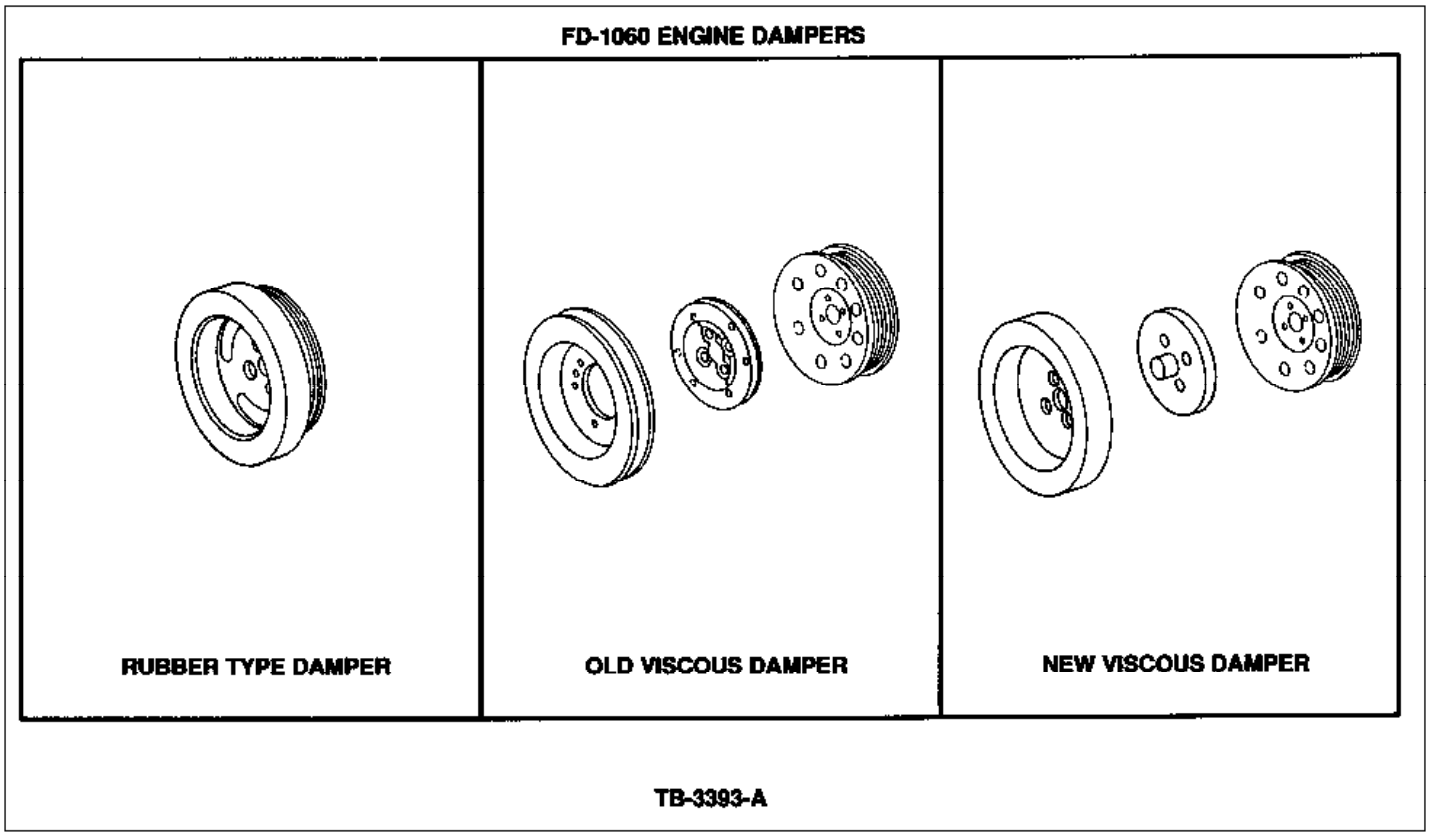


Figure 1 - Article 95-10-18

POWER TAKE OFF (PTO) USAGE

Both the rubber and viscous dampers can be used with a crankshaft-mounted PTO adapter. Refer to the Application Chart for the correct part number and application.

VISCOUS DAMPER RETROFIT

Use the following parts to retrofit a viscous damper in place of a rubber damper:

- Viscous Damper (F3HZ-6312-G)
- Adapter (F3HZ-6A329-A)
- Drive Belt Pulley (F3HZ-6312-A)
- Bolt Kit - longer capscrews (Cummins part number 3924584 or Ford part number 3924584-CF1 hex flange head capscrews)

Refer to Section 03A-01 of the appropriate Powertrain/Drivetrain Service Manual for the damper installation procedures and attaching bolt torque specifications.

OTHER APPLICABLE ARTICLES:

94-8-24

WARRANTY STATUS: INFORMATION ONLY

OASIS CODES: 490000, 499000

95-11, ***Publication Date: JUNE 5, 1995***

Transmission - Rockwell RMX9 And RMO9 Overdrive Transmissions - Transmission Countershaft End Clearance May Not Be Within Specification - Vehicles Built From 4/1/90 Through 1/31/93 - Serial Numbers LB9000240 Through LB93001999	**Article No. 95-11-17**

MEDIUM/HEAVY TRUCK:
1990-94 L SERIES

This TSB article is being republished in its entirety to revise the affected serial numbers and vehicles.

ISSUE:
The transmission countershaft bearing end clearance may not be within specification on some vehicles. This could result in an early countershaft bearing concern. The affected transmission was installed on Ford vehicles as a DSO option. Direct drive and 13-speed transmissions are not involved.

ACTION:
Call the **Rockwell Customer Service Center Hotline, 800-535-5560 (USA and Canada),** for information regarding this program. Rockwell Transmission will repair the failed transmissions with factory remanufactured transmissions under warranty. For vehicles domiciled in Australia, contact Rockwell International located in Sunshine, Victoria, Australia.

OTHER APPLICABLE ARTICLES: NONE

SUPERSEDES: 95-6-21

WARRANTY STATUS: INFORMATION ONLY

OASIS CODES: 505000, 597997

95-11, ***Publication Date: JUNE 5, 1995***

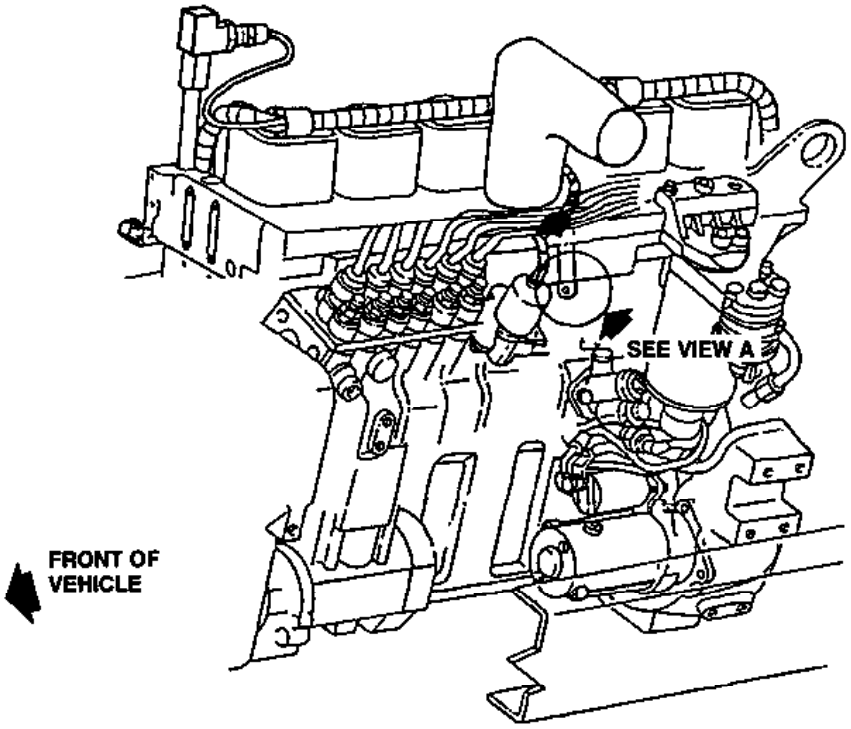
• **Stall Or No Start - Fuel Shutdown Solenoid - Wiring Chafing On Fuel Injector Lines - Vehicles Built Before 10/19/94 With FD1060 Engine And Bosch P7100 Fuel Injection Pump** • **Wiring - Fuel Shutdown Solenoid - Stall Or No Start - Wires Rubbing On Fuel Injector Lines - Vehicles Built Before 10/19/94 With FD1060 Engine And Bosch P7100 Fuel Injection Pump** • **Fuel Shutdown Solenoid - Stall Or No Start - Wiring Chafing On Fuel Injector Lines - Vehicles Built Before 10/19/94 With FD1060 Engine And Bosch P7100 Fuel Injection Pump**	**Article No. 95-11-15**

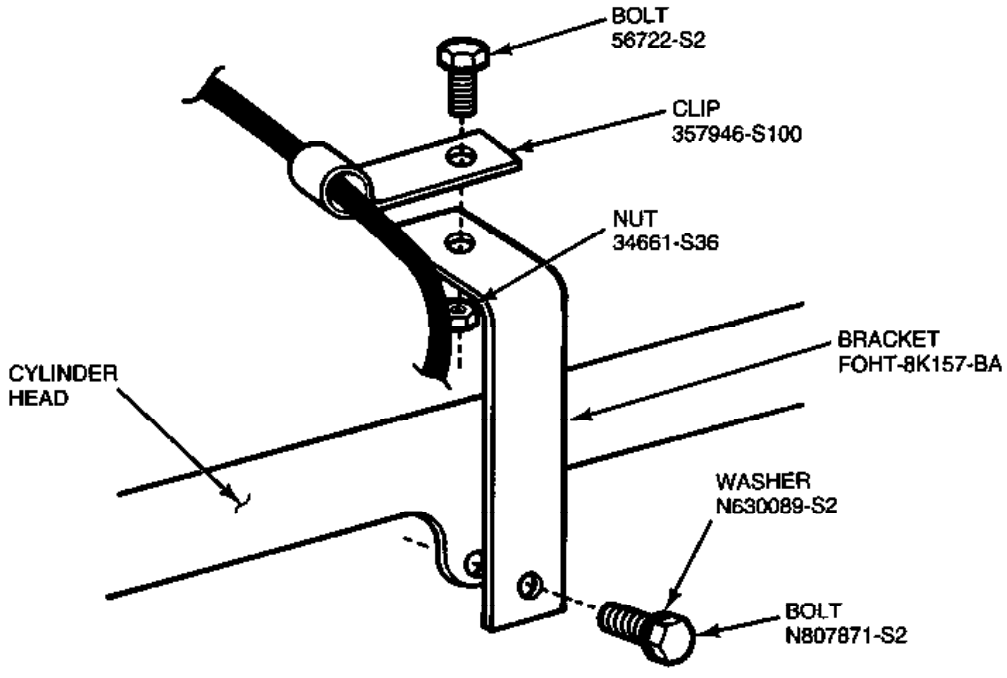
MEDIUM/HEAVY TRUCK:
1993-95 CARGO SERIES, F & B SERIES, L SERIES

ISSUE:
The Fuel Shutdown Solenoid wiring harness may rub against the Fuel Injector Lines and create a short circuit. This may be caused by the convoluted tubing not fully enclosing the Fuel Shutdown Solenoid wiring harness allowing it to rub on the fuel lines.

ACTION:
Install a stand-off bracket and secure the wiring to the bracket to move the wiring away from the fuel lines. Refer to the Instruction Sheet (I.S. 6672) included in the kit and the following for service details.

1. Install the stand-off bracket using the M12 bolt and washer as shown in Figure 1. Torque the bolt to 44-70 lb-ft (60-95 N-m).





VIEW A

TB-4094-A

Figure 1 - Article 95-11-15

2. Install the retaining clip around the Fuel Shutdown Solenoid wire and secure to the Stand-off Bracket as shown in Figure 1. Ensure that the wiring has adequate clearance from the injector lines. Torque the 5/16 bolt to 12-17 lb-ft (16-23 N-m).

The Stand-off Bracket Kit (F5HZ-8K157-CA) includes the following:

- One (1) Bracket
- Two (2) Bolts
- One (1) Washer
- One (1) Nut with Washer
- One (1) Instruction Sheet (I.S. 6672)

OTHER APPLICABLE ARTICLES: NONE

WARRANTY STATUS: Eligible Under Basic Warranty Coverage And Emissions Warranty Coverage

LABOR ALLOWANCE

DEALER CODING

OASIS CODES: 203000, 404000

95-11, ***Publication Date: JUNE 5, 1995***

• **Climate Control - Revised Blower Motor Switch - Vehicles Equipped With City Delivery Instrument Panels** • **Heater - Revised Blower Motor Switch - Vehicles Equipped With City Delivery Instrument Panels**	**Article No. 95-11-16**

MEDIUM/HEAVY TRUCK:
1970-90 L SERIES

ISSUE:
A revised heater blower switch with a retrofit wiring connector has been developed.

ACTION:
Splice the wiring assembly into the existing harness. This will allow for the installation of the revised heater blower switch. Refer to the following procedure for service details.

SERVICE PROCEDURE

1. Remove the climate control assembly, referring to the appropriate Service Manual. Remove the heater blower switch and disconnect the electrical connector.

2. Cut the blower switch wiring approximately 4-6" (102-152mm) from the end of the connector.

3. Strip all cut wiring 0.3" (7.6mm). Match the color coding of the new assembly to the existing wiring from the main harness.

   NOTE:
   ON OLDER VEHICLES, A CIRCUIT NUMBER AND COLOR CHANGE IS APPARENT ON ONE (1) WIRE. THESE VEHICLES WILL NOT HAVE CIRCUIT #57 (BLACK) TO THE BLOWER SWITCH. INSTEAD, THEY WILL HAVE CIRCUIT #399 (BROWN). IF ENCOUNTERED, SPLICE CIRCUIT #399 (BROWN) OF THE EXISTING HARNESS INTO CIRCUIT #57 (BLACK) OF THE NEW WIRING HARNESS.

4. Insert the corresponding wires into the wiring assembly (F5HZ-14A411-A). Crimp all connectors. Apply heat to all of the dual wall butt splice until the insulation shrinks and adhesive flows from each end.

5. Remove the blower motor switch, and replace with new switch (FOHZ-19986-A), connect the switch to the wiring assembly.

6. Reinstall the climate control assembly.

OTHER APPLICABLE ARTICLES: NONE

WARRANTY STATUS: Eligible Under Basic Warranty Coverage

LABOR ALLOWANCE

DEALER CODING

OASIS CODES: 203000, 208000

95-11, ***Publication Date: JUNE 5, 1995***

Transmission - Rockwell RMX9 And RMO9 Overdrive Transmissions - Transmission Countershaft End Clearance May Not Be Within Specification - Vehicles Built From 4/1/90 Through 1/31/93 - Serial Numbers LB9000240 Through LB93001999	**Article No. 95-11-17**

MEDIUM/HEAVY TRUCK:
1990-94 L SERIES

This TSB article is being republished in its entirety to revise the affected serial numbers and vehicles.

ISSUE:
The transmission countershaft bearing end clearance may not be within specification on some vehicles. This could result in an early countershaft bearing concern. The affected transmission was installed on Ford vehicles as a DSO option. Direct drive and 13-speed transmissions are not involved.

ACTION:
Call the **Rockwell Customer Service Center Hotline, 800-535-5560 (USA and Canada),** for information regarding this program. Rockwell Transmission will repair the failed transmissions with factory remanufactured transmissions under warranty. For vehicles domiciled in Australia, contact Rockwell International located in Sunshine, Victoria, Australia.

OTHER APPLICABLE ARTICLES: NONE

SUPERSEDES: 95-6-21

WARRANTY STATUS: INFORMATION ONLY

OASIS CODES: 505000, 597997

95-12, ***Publication Date: JUNE 19, 1995***

Hood - Check Cables Restrict Hood Opening - Vehicles Without Bright Chrome Grille Surround	**Article No. 95-12-10**

MEDIUM/HEAVY TRUCK:
1989-95 LL-9000, LTL-9000

ISSUE:
The hood may not fully open on some vehicles. This is due to insufficient length of the hood check cables.

ACTION:
Install new Hood Check Cables as outlined in the appropriate Service Manual, Section 01-02. The cables were lengthened by 127mm (5") allowing more forward travel when the hood is tilted. This allows the hood to travel beyond its center of gravity to fully open past its pivot point on vehicles with or without a bright chrome grille surround.

OTHER APPLICABLE ARTICLES: NONE

WARRANTY STATUS: Eligible Under Basic Warranty Coverage

LABOR ALLOWANCE

OASIS CODES: 108000

95-12, ***Publication Date: JUNE 19, 1995***

• **Suspension - Front - "Popping" Noise When Turning** • **Noise - "Popping" Sound When Turning**	**Article No. 95-12-11**

MEDIUM/HEAVY TRUCK:
1988-94 L SERIES

ISSUE:
TSB 92-12-22 provided new one-piece spiral grooved bushings and TSB 93-18-17 provided bronze thrust washers to reduce front spring "popping" noises. The bronze thrust washers were replaced with thicker, hardened steel washers in TSB 94-18-14. Further analysis has revealed the need for additional tools for reaming the spring eyes and spot facing suspension connection points. The procedures for using the new tools are incorporated into these instructions. The new procedure allows the springs to remain fastened to the front axle. Also, the need for the broach (D94T-3110-A or equivalent) has been eliminated.

ACTION:
Install the new thicker, hardened steel thrust washers to improve the fit-up of the front springs, and lubricate the bushings with Ford-approved grease. The new bushings were added in production during the 1993 model year launch. The new washers are a service part only to correct the bushing/spring bracket tolerance issue. Refer to the following procedure for service details.

THE ROTUNDA SPRING SHACKLE REPAIR KIT (139-00100) MUST BE USED TO PERFORM THIS TSB ARTICLE. THE KIT INCLUDES THE FOLLOWING:

- **2.25" Diameter Spot Facing Cutter (Piloted)**
- **T-Wrench with 4" Tube**
- **8" Extension Tube**
- **Bit Cleaning Brush**
- **Hex Driver**
- **Tool Case**
- **1.25" Diameter Reamer**
- **1.00" Diameter Wire Brush**
- **1.25" Diameter Wire Brush**
- **Three (3) Replacement Carbide Bits (One Replacement Set)**

NOTE:
REFER TO THE 1994 L-SERIES SERVICE MANUAL, SECTION 04-01A, FOR ILLUSTRATIONS AND FASTENER TORQUE VALUES.

INSPECTION PROCEDURE

1. Apply the parking brake and chock the rear wheels.

   a. Raise the front of the vehicle evenly until the front wheels are off the ground.

   b. Position jack stands under each frame rail and lower the vehicle onto the stands. This removes the weight from both sides of the front suspension.

   NOTE:
   PERFORM THE FOLLOWING AT BOTH THE FRONT AND REAR SPRING EYES AND AT THE SHACKLE BRACKETS ON BOTH SIDES OF THE VEHICLE (SIX (6) TOTAL BUSHING LOCATIONS), ONE SIDE AT A TIME.

2. Place a floor jack under the front axle and raise enough to relieve the weight off the springs.

3. Remove the front rear shackle bracket clinch bolts and nuts (right and left hand side). Remove the shackle pins and shackle brackets and lower the floor jack. Support the axle enough to allow access in the shackle area.

4. Inspect the bushings to determine if the bushings are the spiral groove type (it may be necessary to remove some grease to identify the grooves). If the bushing inner surface is smooth, replace the bushing with the new spiral groove type bushing (Steps 4-7 in this article).

5. Inspect the following for wear:

   - Shackle brackets and bushings
   - Shackles
   - Spring eye bushings
   - Front hanger brackets

The shackles, shackle brackets and front spring hanger must be inspected for grooves where parts could come into contact.

NOTE:
IF THE FORD-APPROVED LUBRICANT WAS NOT USED ON THE VEHICLE, THE REMAINING GREASE MUST BE REMOVED AND THEN THE APPROVED LUBE (SEE FIGURE 1) MUST BE USED TO PREVENT PREMATURE BREAKDOWN OF THE LUBE.

FORD LUBE APPROVED SOURCE LIST

SPEC/CODE	USA SUPPLIER NAME/REMARKS	TRADE NAME/CODE
• ESA-M1C75-B	GREASE GENERAL CHASSIS, LONG LIFE LUBRICATION (FORD) (POLYETHYLENE AND MOLYBDENUM DISULFIDE ADDITIVES)	MOTORCRAFT XG-1-C
• S217A	SHELL OIL CO. (KTP USES #70377)	SHELL LITHIUM MOLY POLY
• E960A	EXXON CO. USA	5160
• C867-A	CONOCO, INC.	CONOCO 6897-158
• E208A	BATTENFELD GREASE AND OIL CORP. DIST: KENDALL REFINING, SURBOND LUBRICANTS	B-175-B
• B209A	BATTEN FELT AMERICA	BA-175-B
• A386A	AMOCO OIL CO.	LG-1007
• S427A	SOUTHWEST PETRO CHEMICAL, INC.	SA-8279132
SPEC/CODE	**CANADA SUPPLIER NAME/REMARKS**	**TRADE NAME/CODE**
• S901A	SURBOND LUBRICANTS LTD.	42-M
• B191A	BATTENFELD GREASE CANADA LTD. DIST: WOBBISH, SURBOND LUBRICANTS, LTD. MIC75-B	MIC75-B

TB-3592-A

Figure 1 - Article 95-12-11

CAUTION:
MIXING INCOMPATIBLE LUBRICANTS WILL CAUSE EITHER SOLIDIFICATION OR LIQUIFICATION OF THE LUBE MIXTURE.

NOTE:
USE ONLY FORD-APPROVED LUBE (XG-1-C PREFERRED). OTHER LUBES HAVE NOT PERFORMED ACCEPTABLY IN THIS APPLICATION. THE RECOMMENDED LUBE SERVICE INTERVAL IS EVERY 6000 MILES (9660 KM).

SERVICE PROCEDURE

If the bushings are worn or found to be the old design, install new Spiral Groove Bushings (F2HZ-5348-A) in all three (3) connections according to the following procedure. Use the special service tools listed below.

- 139-00100 - Rotunda Spring Shackle Repair Kit
- D94T-3110-B - Non-Expanding Arbor
- D94T-3110-C - Expanding Arbor

1. Using the non-expanding arbor tool (D94T-3110-B) and a large C-clamp, press out the old shackle bracket bushing and press in the new shackle bracket bushing.
2. Using the expanding arbor tool (D94T-3110-C) and a large C-clamp, press the old bushings out of the spring eyes.
3. Clean the spring eye using the 1.25" brush included in the Rotunda Spring Shackle Repair Kit (139-00100).

4. Ream the spring eyes by rotating clockwise with the 1.25" reaming tool included in the Rotunda Spring Shackle Repair Kit (139-00100). The reamer must pass completely through the spring eye to be properly sized.

NOTE:
THE REAMER MUST ALWAYS APPROACH THE SUSPENSION CONNECTIONS AS SHOWN IN FIGURE 2 TO PREVENT DAMAGING THE REAMER.

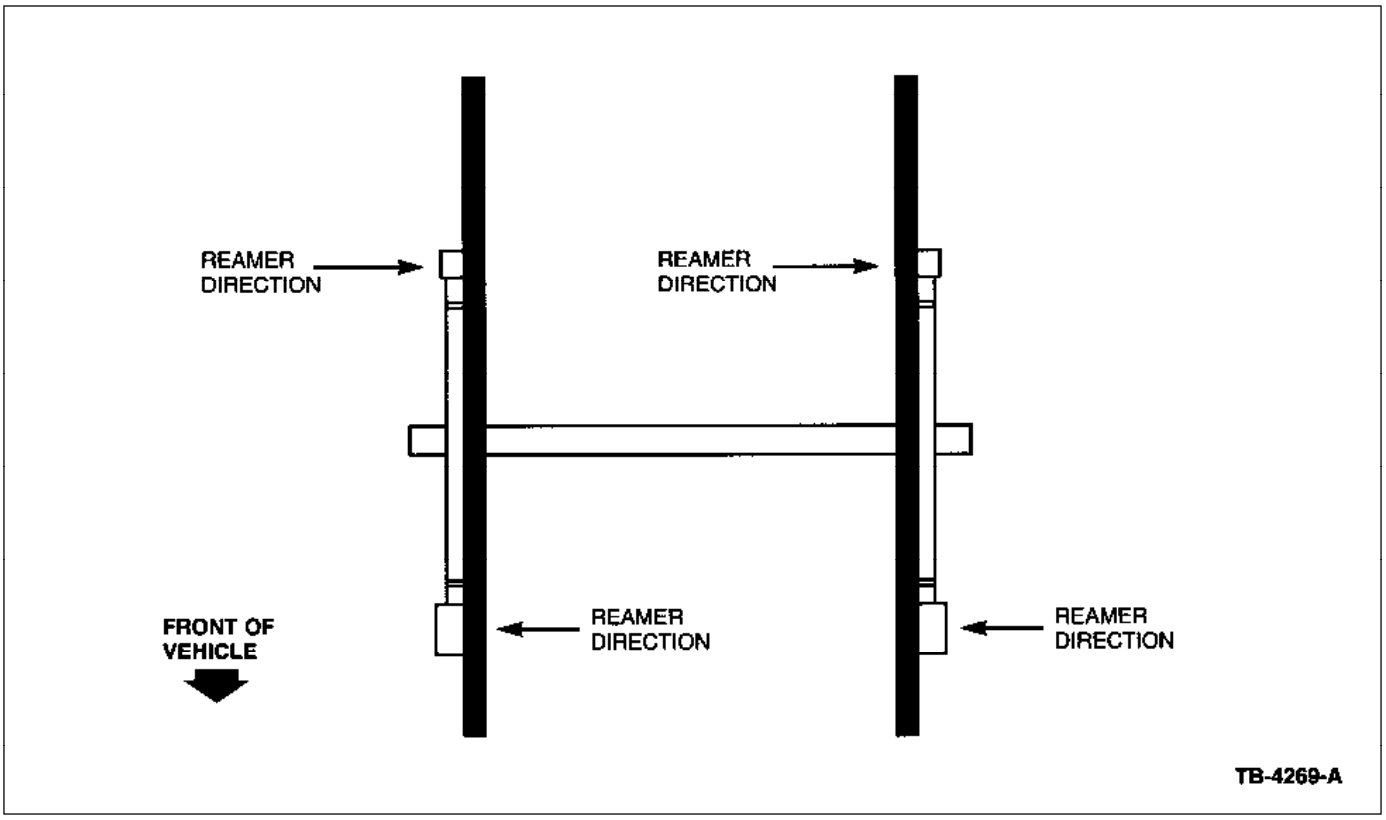


Figure 2 - Article 95-12-11

5. Press the new bushings (F2HZ-5348-A) in with C-clamps and non-expanding arbor (D94T-3110-B).

6. Clean the shackle and the front spring hanger pin bores by using the 1.00" diameter wire brush included in the Rotunda Spring Shackle Repair Kit (139-00100). Remove all grease from the shackle bracket area that contacts the spring.

7. Using the spot face tool and T-wrench included in the Rotunda Spring Shackle Repair Kit (139-00100), spot face the shackle and shackle bracket as required to remove any raised or grooved material. This will normally be on the thrust side of the bracket, which is the location where the steel thrust washers will be placed during assembly. Clean the cutting edges of the spot face tool frequently during use with the brush included for cutting performance and bit life.

NOTE:
TURN THE SPOT FACING TOOL BY HAND ONLY. THE USE OF A POWER SOURCE WILL DAMAGE THE TOOL BODY AND CUTTING EDGES. THIS TOOL IS DESIGNED TO REMOVE RAISED AND/OR GROOVED MATERIAL ONLY, NOT TO MACHINE THE ENTIRE SURFACE AREA.

8. Reassemble the rear shackles and brackets with the new shackle pins (E5HZ-5780-B for a 6.7" pin and E5HZ-5780-A for a 6.1" pin). Prior to fully seating the shackle pins, shift/pry the spring away from the spot faced surface and install steel thrust washers (F4HZ-5A879-A (0.030") and F4HZ-5A879-B (0.040")) between the spring and shackle bracket. Select the thrust washers to obtain the closest fit

possible (it may be necessary to spot face again if a slight adjustment is needed to obtain the tightest possible fit).

9. Install all retaining nuts and bolts and torque to specifications using the appropriate Service Manual specifications.

10. Remove the front spring pin, perform Steps 6-15 on the front spring hanger bracket and spring.

11. Lubricate all front suspension pivot points using the Ford approved lubricant (XG-1-C).

12. Remove the jack stands and lower the vehicle.

OTHER APPLICABLE ARTICLES: NONE

SUPERSEDES: 92-12-22, 94-18-14

WARRANTY STATUS: Eligible Under Basic Warranty Coverage

LABOR ALLOWANCE

DEALER CODING

OASIS CODES: 203200, 303000, 304000, 702000, 702100

Bulletin Contents

TSB Article 95-12-12 has been superseded by Article 96-6-12.

95-13, ***Publication Date: JULY 3, 1995***

Steering - Tilt And Telescoping Column - Kit Availability To Remove Free Play	Article No. 95-13-8

MEDIUM/HEAVY TRUCK:
1991-95 L SERIES

ISSUE:
The tilt and telescoping steering column may have free play.

ACTION:
To improve this condition, a kit has been made available for service which contains an Instruction Sheet and plug.

OTHER APPLICABLE ARTICLES: NONE

WARRANTY STATUS: Eligible Under Basic Warranty Coverage

LABOR ALLOWANCE

OASIS CODES: 303000

95-13, ***Publication Date: JULY 3, 1995***

• **Air Conditioning - A/C Drive Belt Comes Off - Vehicles With Dealer Installed A/C And 7.8L Ford New Holland (FNH) Engine** • **Air Conditioning - Lack Of Cooling - A/C Drive Belt Comes Off - Vehicles With Dealer Installed A/C And 7.8L Ford New Holland (FNH) Engine**	**Article No. 95-13-9**

MEDIUM/HEAVY TRUCK:
1986-93 CARGO SERIES

This TSB is being republished in its entirety to correct the vehicles affected and the model years.

ISSUE:
The A/C belt may roll off the pulley on some vehicles equipped with dealer installed A/C and 7.8L FNH engine. This may be due to instability of the idler bracket assembly.

ACTION:
Replace the single pulley idler with a new dual pulley idler. The dual pulley idler should improve the stability of the long A/C drive belt. Refer to the following Service Procedure for details.

SERVICE PROCEDURE

1. Remove the A/C drive belt.
2. Verify the harmonic balancer pulley has no more than 0.020" runout using a dial indicator. If runout exceeds 0.020", replace the pulley and recheck runout.

   NOTE:
   CHECK COMPRESSOR PULLEY ALIGNMENT WITH HARMONIC BALANCER PULLEY BEFORE REPLACING IDLER/BRACKET ASSEMBLY. MAKE ADJUSTMENTS AS NECESSARY.
3. Remove the single pulley idler assembly.
4. Install the new dual pulley idler assembly (E8HZ-19K603-A).
5. Reinstall the A/C drive belt (replace if worn).
6. Run the engine for 10-15 minutes to allow the belt to stretch.
7. Readjust the drive belt.

OTHER APPLICABLE ARTICLES: NONE

SUPERSEDES: 95-10-17

WARRANTY STATUS: Eligible Under Basic Warranty Coverage

LABOR ALLOWANCE

DEALER CODING

OASIS CODES: 208000, 208200

95-14, ***Publication Date: JULY 17, 1995***

• **Noise - Vibration - Transmitted Through Non-Isolated Shift Tower/Lever - DSO Rockwell Transmission - Vehicles Built Before 11/29/93** • **Transmission - DSO Rockwell - Noise And Vibration Transmitted Through Non-Isolated Shift Tower/Lever - Vehicles Built Before 11/29/93**	**Article No. 95-14-14**

MEDIUM/HEAVY TRUCK:
1990-94 L SERIES

ISSUE:
Objectionable noise or vibration may be transmitted through the shift tower/lever into the cab on some L-Series vehicles. This is caused by the lack of isolation on the shift lever.

ACTION:
Install an isolated shift tower/lever to the current transmission. Refer to the following Service Procedure for details.

SERVICE PROCEDURE

1. Remove the shift knob, including the air lines for the shift selector making note of their location.
2. Remove the cab floor transmission access panel, including the shift boot. Remove panel and boot over the shift lever.
3. Remove the shift tower/lever assembly from the top of the transmission. Discard the gasket and retain the bolts for reuse.
4. Install the new shift lever assembly (refer to chart in this article for correct part application) and gasket (3208-N-1080). Torque bolts from 34-47 N-m (25-35 lb-ft).
5. Install the floor transmission access panel removed in Step 2.
6. Install the shift knob removed in Step 1, and reinstall the air lines to the shift knob.

OTHER APPLICABLE ARTICLES: NONE

WARRANTY STATUS: Eligible Under Basic Warranty Coverage

LABOR ALLOWANCE

DEALER CODING

OASIS CODES: 505000, 505200, 702000, 703000

95-14, ***Publication Date: JULY 17, 1995***

Clutch - New Clutch Rod Assemblies With Improved Swivel Bushings	Article No. 95-14-15

MEDIUM/HEAVY TRUCK:
1993-95 F SERIES, L SERIES

ISSUE:
Clutch rod assemblies with improved bushing-to-housing containment have been released for service. The improved clutch rod should reduce the possibility of the bushing becoming attached to the ball portion of the swivel, thus spinning the bushing in the housing.

ACTION:
If service to the clutch rod assembly becomes necessary, replace the clutch rod assembly with an improved clutch rod assembly. Refer to the following Application Chart for the proper Service Part numbers. Refer to Section 08-02 of the appropriate Service Manual for replacement procedures.

OTHER APPLICABLE ARTICLES: NONE

WARRANTY STATUS: INFORMATION ONLY

OASIS CODES: 505200, 506000

95-15, ***Publication Date: JULY 31, 1995***

Steering Gear - Replacement Of Bendix Steering Gear With New Ross Steering Gear	Article No. 95-15-15

MEDIUM/HEAVY TRUCK:
1986-93 CARGO SERIES
1988-93 F & B SERIES

This TSB is being republished in its entirety to correct part number usage for the pitman arm in Figure 1 and to arrange text to flow with figures.

ISSUE:
Production of the Bendix steering gear has been discontinued. Sufficient Service parts are available to support the field with Bendix gears for several years. However, a customer may want the option to replace the Bendix steering gear with the current production Ross steering gear.

ACTION:
As required, replace the Bendix steering gear with a Ross steering gear. Refer to the following procedure and its attachments for part requirements and service details.

REPLACEMENT OF C500N STEERING GEAR WITH ROSS TAS65 STEERING GEARS

APPLICATION: F-SERIES WITH 10000/12000 LB (ROSS TAS65) FRONT AXLE

PROCEDURE: Bendix Gear Removal

1. Thoroughly clean off all outside dirt, especially around fittings.

   CAUTION:
   DO NOT STEAM CLEAN OR HIGH-PRESSURE WASH HYDRAULIC STEERING ASSEMBLIES OR FORCE/ABUSE CLOSELY FITTED PARTS. DAMAGE WILL RESULT.

2. Disconnect the power steering pressure and return lines at the gear and drain fluid.

3. Disconnect the drag link from the pitman arm.

4. Remove the pitman arm pitch bolt and nut (save for reuse). Optional: Remove the pitman arm from the sector shaft using Pitman Arm Puller (T64P-3590-F).

5. Remove intermediate shaft U-joint nut and bolt and disconnect it from the steering gear input shaft.

6. Disconnect steering gear mounting hardware and remove the gear from the truck's side rail.

7. Remove power steering pump per Service Manual, Section 13 (pre-1993 model years) instructions.

   NOTE:
   REFER TO FIGURE 1 FOR PART USAGE INFORMATION.

STEERING GEAR CONVERSION CHART
F-SERIES — MODEL YEARS 1989 THROUGH 1993 10/12000 LB
FRONT AXLES - BENDIX C500N TO ROSS TAS65

ITEM	FROM	TO
GEAR	F2HT-3N503-CA (C500N) F1HT-3N503-JA (C500N) FOHT-3N503-CA (C500N)	E7HZ-3504-H (TAS65)
HARDWARE	— —	USE C/O BOLTS USE C/O NUTS AND WASHERS
PITMAN ARM	F2HT-3590-DA E9HT-3590-AA	F3HZ-3590-C (USE FOR BOTH DA AND AA ARMS)
PINCH BOLT/NUT	—	USE C/O BOLT AND NUT
DRAGLINK ATTACHING HARDWARE	E8HT-3304-AA —	USE C/O DRAGLINK USE C/O HARDWARE
POWER STEERING PUMP	E8HT-3A674-AA (FOR 1988 THROUGH NOVEMBER,1990) F1HT-3A674-FA (FNH DIESEL) (FOR NOVEMBER, 1990 THROUGH 1993) E9HT-3A674-CA (CUMMINS) F3HT-3A674-AB (CUMMINS)	E8HZ-3A674-M F3HZ-3A674-F F4HZ-3A674-D (AIR BRAKES) F4HZ-3A674-F (HYDRAULIC BRAKES)
POWER STEERING PUMP AND RESERVOIR	E8HT-3K514-BA (GAS)	F4HZ-3A674-C
POWER STEERING HOSES	E8HT-3A719-CA (DIESEL) E8HT-3A719-NA (GAS)	USE C/O HOSE USE C/O HOSE
HOSE FITTINGS	—	USE C/O FITTINGS EXCEPT AT THE GEAR INLET PORT - ADD 45 DEGREE ELBOW (384285-S7)

TB-3491-B

Figure 1 - Article 95-15-15

Ross Gear Installation

NOTE:
PLEASE REFER TO 1993 OR NEWER FORD SERVICE MANUAL, SECTION 11-02, FOR DETAILS CONCERNING FINAL GEAR ADJUSTMENTS OF THE SECTOR SHAFT, PITMAN ARM AND POPPET VALVES TO SUPPLEMENT THE GENERAL INSTALLATION OUTLINE GIVEN BELOW.

1. Install the power steering pump per appropriate model year Service Manual. NOTE THAT THIS NEW HIGHER PRESSURE PUMP IS REQUIRED BECAUSE THE ROSS TAS65 GEAR USES A HIGHER PRESSURE SYSTEM (150 BAR VS. 140 BAR FOR BENDIX GEAR).

2. Place the gear on the side rail and install the nuts and bolts. Torque bolts to 299-406 N-m (220-300 lb-ft).

3. Install intermediate shaft U-joint onto the steering gear input shaft. Torque bolts to 68-95 N-m (50-70 lb-ft).

4. Place new pitman arm on the steering gear sector shaft and align the arm's notch with the notch on

the end of the sector shaft. Use a chisel to spread the pitman arm and slide it onto the sector shaft.

WARNING:
DO NOT USE A HAMMER TO FORCE THE PITMAN ARM ONTO THE SECTOR SHAFT. THIS COULD DAMAGE SECTOR SHAFT BEARINGS AND CAUSE LOSS OF GEAR PRELOAD.

5. Install pitman arm pitch bolt and nut. Torque nut to 299-406 N-m (220-300 lb-ft).

6. Attach pitman arm to drag link, torque nut to 150-204 N-m (111-151 lb-ft). Insert cotter pin.

7. Install 45 degree elbow on the gear pressure port and align the elbow so that its centerline is parallel to the truck's side rail. Attach the pressure line and return line to the gear.

NOTE:
TAKE CARE NOT TO CRIMP THE LINES. REFER TO FIGURE 4.

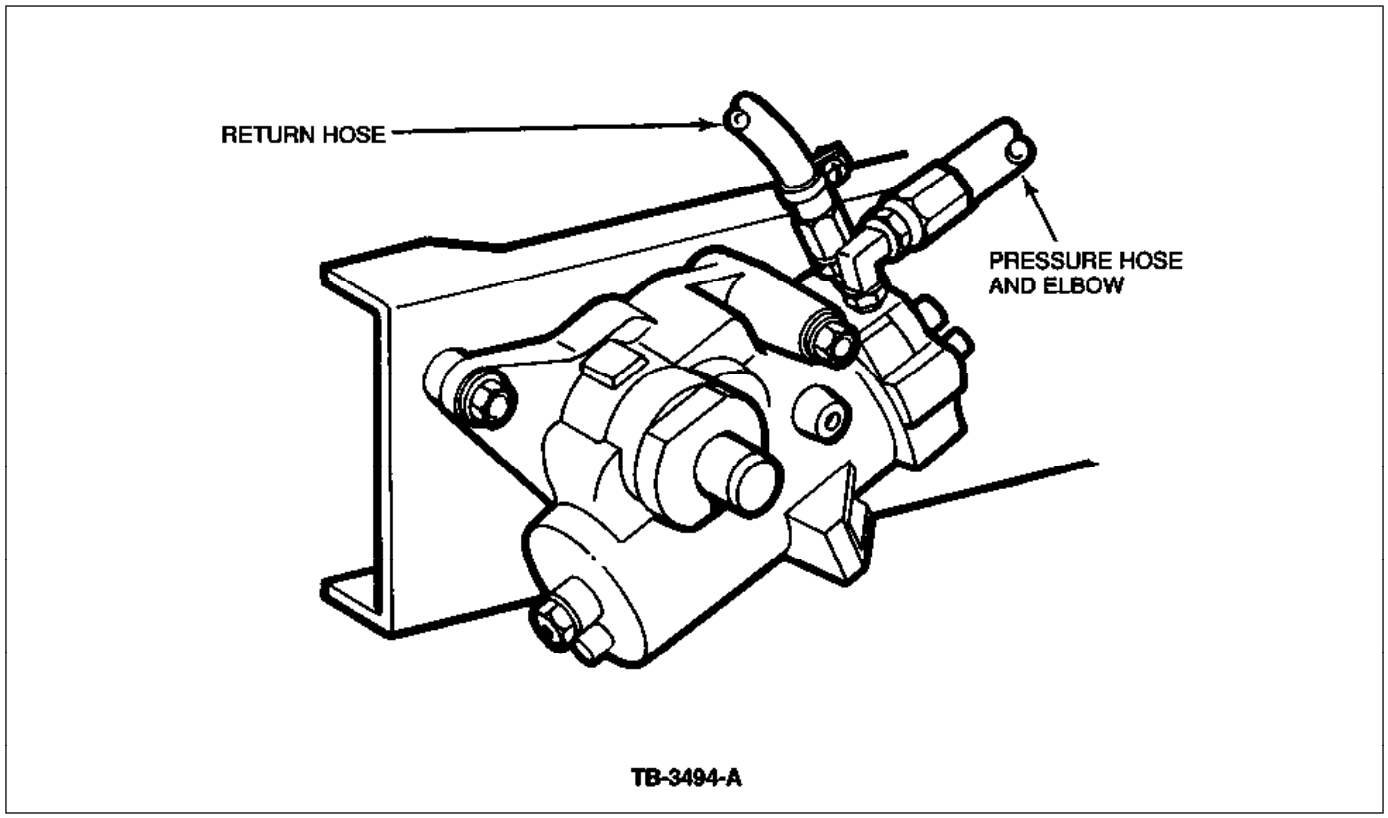


Figure 4 - Article 95-15-15

8. Fill the reservoir with Motorcraft (MERCON Multi-Purpose Auto-Transmission Fluid, XT-2-QDX (E4AZ-19582-B) or equivalent).

9. To check system for leaks, remove air from the system and check power assist through range of wheel articulation. Start engine, rotate wheels from wheel stop to stop.

DO NOT HOLD THE WHEELS AGAINST THE STOPS FOR LONGER THAN **5 SECONDS**.

If power assist is significantly reduced before reaching the stop bolts, check stop bolts for proper setting. If the bolt setting is correct, or the setting has been corrected, and stop bolts are not contacted, refer to the Truck Service Manual, Steering Diagnosis and Testing Section.

REPLACEMENT OF C300N STEERING GEAR WITH ROSS TAS40/55 STEERING GEARS

APPLICATION: F/B-SERIES WITH: 6000-7000 LB FRONT AXLE, BENDIX C300N TO ROSS TAS40; 8000-9000 LB FRONT AXLE, BENDIX C300N TO ROSS TAS55

PROCEDURE:

1. Thoroughly clean off all outside dirt, especially around fittings.

   CAUTION:
   DO NOT STEAM CLEAN OR HIGH-PRESSURE WASH HYDRAULIC STEERING ASSEMBLIES OR FORCE/ABUSE CLOSELY FITTED PARTS. DAMAGE WILL RESULT.

2. Disconnect the power steering pressure and return lines at the gear.

3. Disconnect the drag link from the pitman arm.

4. Remove the pitman arm pitch bolt and nut. Remove the pitman arm from the sector shaft using Pitman Arm Puller (T64P-3590-F).

5. Remove intermediate shaft U-joint nut and bolt and disconnect it from the steering gear input shaft.

6. Disconnect steering gear mounting hardware and remove the gear from the truck's side rail.

   NOTE:
   THE 5/8" MOUNTING BOLTS MUST BE REPLACED BY 3/4" SIZE BOLTS. TO REMOVE THE TWO (2) FORWARD 5/8" BOLTS, CUT THE BOLTS IN HALF. THE SIDE RAIL HOLES MUST THEN BE ENLARGED TO TAKE THE 3/4" BOLTS (RECOMMENDED HOLE SIZE IS 0.812/0.786" DIAMETER).

7. Disconnect hydraulic lines and remove power steering pump.

   NOTE:
   REMOVE THE DRIVE GEAR FROM THE PUMP ON DIESEL ENGINES AND REMOVE THE PULLEY AND RESERVOIR FROM THE PUMPS ON GAS ENGINES AND SAVE. THESE PARTS WILL BE REUSED ON THE REPLACEMENT PUMPS.

   NOTE:
   REFER TO FIGURE 2 FOR PART USAGE INFORMATION.

STEERING GEAR CONVERSION CHART
F- AND B-SERIES — MODEL YEARS 1988 THROUGH 1993
6/7000 LB FRONT AXLES - BENDIX C300N TO ROSS TAS40
8/9000 LB FRONT AXLES - BENDIX C300N TO ROSS TAS55

ITEM	FROM	TO
GEAR	E8HT-3N503-AD (C300N) F1HT-3N503-HA (C300N) F2HT-3N503-BA (C300N)	F3HZ-3504-A (TAS40) OR F4HZ-3504-A (TAS55)
MOUNTING HARDWARE	—	NEW 58747-S2 3/4 x 10 x 3.5" GRADE 8 (LOWER REAR BOSS), NEW 58749-S2 3/4 x 10 x 4.0" GRADE 8 (FORWARD 2 BOSSES), NEW 34992-S2 3/4 x 10 GRADE 8 NUT – HEX HEAD TORQUE PREVAILING, NEW 44882-S2 3/4 x 1.44 x .13 GRADE 8 FLATWASHER
PITMAN ARM	E8HT-3590-EB (6/7000 LB F.A.) E8HT-3590-BB (8/9000 LB F.A.)	F4HZ-3590-A (TAS40) F3HZ-3590-B (TAS55)
PINCH BOLT/NUT	—	USE C/O BOLT AND NUT
DRAGLINK ATTACHING HARDWARE	E8HT-3304-AA —	USE C/O DRAGLINK USE C/O HARDWARE
POWER STEERING PUMP	E8HT-3A674-AA (FOR 1988 THROUGH NOVEMBER, 1990) F1HT-3A674-FA (FNH DIESEL) (FOR NOVEMBER, 1990 THROUGH 1993) E9HT-3A674-CA (CUMMINS DIESEL) F3HT-3A674-AB (CUMMINS DIESEL)	E8HZ-3A674-M F3HZ-3A674-F F4HZ-3A674-D (AIR BRAKES) F4HZ-3A674-F (HYDRAULIC BRAKES)
POWER STEERING PUMP AND RESERVOIR	E8HT-3K514-AA (GAS)	F4HZ-3A674-B
POWER STEERING HOSES	E8HT-3A719-CA (DIESEL) E8HT-3A719-NA (GAS)	USE C/O HOSE USE C/O HOSE
HOSE FITTINGS	—	USE C/O FITTINGS EXCEPT AT THE GEAR INLET PORT - ADD 45 DEGREE ELBOW (384285-S7)

TB-3492-B

Figure 2 - Article 95-15-15

Ross Gear Installation

NOTE:
PLEASE REFER TO 1993 OR NEWER FORD SERVICE MANUAL, SECTION 11-02A, FOR DETAILS CONCERNING FINAL GEAR ADJUSTMENTS OF THE SECTOR SHAFT, PITMAN ARM AND POPPET VALVES TO SUPPLEMENT THE GENERAL INSTALLATION OUTLINE GIVEN BELOW.

1. Place the gear on the side rail and install the nuts and bolts. Torque bolts to 407-433 N-m (300-320 lb-ft).

NOTE:

INSTALL THE 3/4" BOLTS WITH THE BOLT HEADS OUTBOARD AND NUTS INBOARD.

2. Install intermediate shaft U-joint onto the steering gear input shaft. Torque bolts to 68-95 N-m (50-70 lb-ft).

3. Place the pitman arm on the steering gear sector shaft and align the arm's notch with the notch on the end of the sector shaft. Use a chisel to spread the pitman arm and slide it onto the sector shaft.

4. Install arm pitch bolt and nut. Torque nut to 407-433 N-m (300-320 lb-ft).

5. Attach pitman arm to drag link. Torque to 103-142 N-m (76-105 lb-ft). Insert cotter pin.

6. Install 45 degree elbow on gear pressure port and align the elbow so that its centerline is parallel to the truck's side rail. Attach pressure and return lines to the gear. TAKE CARE NOT TO CRIMP THE LINES. Refer to Figure 4 for elbow orientation.

7. Fill the reservoir with Motorcraft (MERCON Multi-Purpose Auto-Transmission Fluid, XT-2-QDX (E4AZ-19582-B) or equivalent).

8. To check system for leaks, remove air from the system and check power assist through range of wheel articulation. Start engine, rotate wheels from wheel stop to stop.

DO NOT HOLD THE WHEELS AGAINST THE STOPS FOR LONGER THAN **5 SECONDS**.

If there is a significant reduction in power assist before reaching the stop bolts, check stop bolts for proper setting. If the bolt setting is correct, or the setting has been corrected, and stop bolts still are not contacted, refer to the Truck Service Manual, Steering Diagnosis and Testing Section.

REPLACEMENT OF C500 STEERING GEAR WITH ROSS TAS65 STEERING GEARS

APPLICATION: CF-SERIES WITH 12000 LB (ROSS TAS65) FRONT AXLE

PROCEDURE: Bendix Gear Removal

1. Thoroughly clean off all outside dirt, especially around fittings.

   CAUTION:
   DO NOT STEAM CLEAN OR HIGH-PRESSURE WASH HYDRAULIC STEERING ASSEMBLIES OR FORCE/ABUSE CLOSELY FITTED PARTS. DAMAGE WILL RESULT.

2. Disconnect the power steering pressure and return lines at the gear and drain fluid.

3. Disconnect the drag link from the pitman arm.

4. Removal of the pitman arm is optional. To remove the pitman arm from the sector shaft use Pitman Arm Puller (T64P-3590-F).

5. Remove intermediate shaft U-joint nut and bolt and disconnect it from the steering gear input shaft.

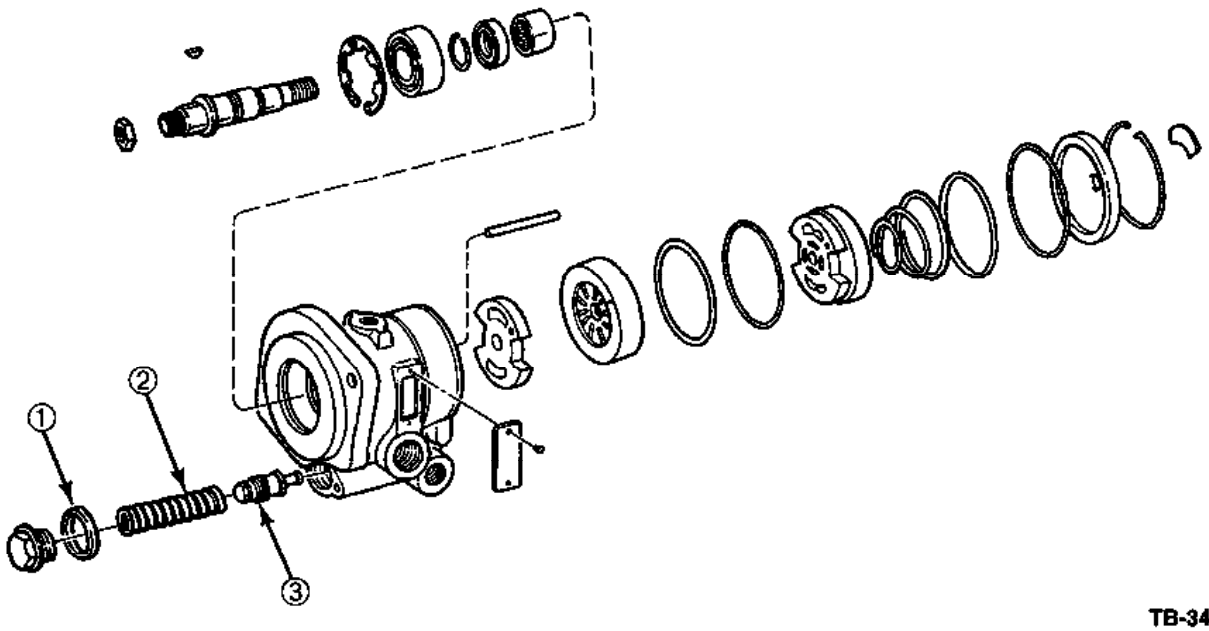
6. Disconnect steering gear mounting hardware and remove the gear from the truck's side rail.

7. Remove power steering pump per Service Manual, Section 13 (pre-1993 model years). instructions.

8. Install Pressure Relief Kit (F3HZ-3A561-C) per the appropriate Service Manual.

NOTE:
REFER TO FIGURE 3 FOR PART USAGE INFORMATION.

STEERING GEAR CONVERSION CHART CF-SERIES — MODEL YEARS 1986 THROUGH 1993 12000 LB FRONT AXLES – BENDIX C500 TO ROSS TAS65		
ITEM	**FROM**	**TO**
GEAR	88HU-3K500-AA (C500)	F3HZ-3504-B (TAS65)
MOUNTING HARDWARE	—	58751-S2 (1) 3/4"-10x4.50" (GRADE 8) USE C/O 58753-S2 BOLTS (2) USE C/O NUTS AND WASHERS
PITMAN ARM PINCH BOLT/NUT	P.I.A. W/GEAR —	F2HZ-3590-D BOLT 58750-S2, 3/4"-10x4.25" NUT 34992-S2, 3/4"-10
DRAGLINK ATTACHING HARDWARE	F1HT-3304-ABA —	USE C/O DRAGLINK USE C/O HARDWARE
POWER STEERING PUMP RELIEF VALVE	REMOVE THE POWER STEERING RELIEF VALVE ASSEMBLY, SPRING AND SEAL ITEMS 1, 2 AND 3 IN ILLUSTRATION BELOW	INSTALL PRESSURE RELIEF KIT F3HZ-3A561-C
POWER STEERING HOSES	87HU-3A719-BA (1985 TO 1990 MY)	F1HT-3A719-ZA
HOSE FITTINGS	—	USE C/O FITTINGS WHERE APPLICABLE, OTHERWISE USE: 384074-S36 (1/2" HOSE - 37° FLARE, 3/4 STD THD) 390536-S7 (NIPPLE - 1/2" HOSE, 3/4"-16 O-RING) E8HT-3E599-BA (90° ELBOW)



TB-3493-B

Figure 3 - Article 95-15-15

Ross Gear Installation

1. Install the power steering pump with the revised relief valve per the appropriate Service Manual. NOTE THAT A NEW HIGHER PRESSURE PUMP IS REQUIRED BECAUSE THE ROSS TAS65 GEAR USES A HIGHER PRESSURE SYSTEM (150 BAR VS. 140 BAR FOR BENDIX GEAR).

2. Place the gear on the side rail and install the nuts and bolts. Torque bolts to 299-406 N-m (220-300 lb-ft).

3. Install intermediate shaft U-joint onto the steering gear input shaft. Torque bolts to 68-95 N-m (50-70 lb-ft).

4. Place the pitman arm on the steering gear sector shaft and align the arm's notch with the notch on the end of the sector shaft. Use a chisel to spread the pitman arm to slide onto the sector shaft.

   WARNING:
   DO NOT USE A HAMMER TO FORCE THE PITMAN ARM ONTO THE SECTOR SHAFT. THIS COULD DAMAGE SECTOR SHAFT BEARINGS AND CAUSE LOSS OF GEAR PRELOAD.

5. Install arm pitch bolt and nut. Torque nut to 299-406 N-m (220-300 lb-ft).

6. Attach pitman arm to drag link. Torque to 150-204 N-m (111-151 lb-ft). Insert cotter pin.

7. Install the pressure and return lines to the gear and pump. TAKE CARE NOT TO CRIMP THE LINES.

8. Fill the reservoir with Motorcraft (MERCON Multi-Purpose Auto-Transmission Fluid, XT-2-QDX (E4AZ-19582-B) or equivalent).

9. To check system for leaks, remove air from the system and check power assist through range of wheel articulation. Start engine, rotate wheels from wheel stop to stop.

DO NOT HOLD THE WHEELS AGAINST THE STOPS FOR LONGER THAN **5 SECONDS.**

If there is a significant increase in steering effort before reaching the stop bolts, check them for proper setting. If the bolt setting is correct, or the setting has been corrected, and stop bolts are not contacted, refer to the Truck Service Manual, Steering Diagnosis and Testing Section.

Refer to the Ford Service Labor Times Manual for applicable labor operations.

OTHER APPLICABLE ARTICLES: NONE

SUPERSEDES: 94-25-8

WARRANTY STATUS: INFORMATION ONLY

OASIS CODES: 303000

95-15, ***Publication Date: JULY 31, 1995***

Brakes - Rear - Re-index Rear/Rear Brake Chamber To Eliminate Interference With DSO Asphalt Spreader Option - Tandem Axle Vehicles Used In Asphalt Spreader Applications	**Article No. 95-15-16**

MEDIUM/HEAVY TRUCK:
1989-95 FT-800, FT-8000, FT-900, L SERIES

ISSUE:
Standard rear axle brake chambers extend beyond the profile of the rear tires. Dealer Special Order (DSO) offers the availability of an asphalt spreader option to re-index the rear axle brake chambers away from the asphalt spreading device or other aftermarket apparatus. Vehicles not ordered with this option and used in this vocation may experience an interference concern with the brake chambers and the asphalt spreader or other aftermarket equipment.

ACTION:
If interference is a concern and the vehicle was not DSO equipped with the asphalt spreader option, re-index the rear brake chambers. Refer to the following Service Procedure for details.

SERVICE PROCEDURE

1. Chock the front wheels to prevent unintended movement and remove the rear wheels, axle shafts, hubs and brake drums. Refer to the appropriate Service Manual, Sections 05-02A and 04-04 for details.

2. Remove the foundation brakes of the tandem rear axle, including the brake spider, camshaft bracket, etc. Refer to the appropriate Service Manual, Section 06-08D for details. Check the condition of the slack adjusters and brake chambers. Retain for re-use if they are in an acceptable condition.

3. Refer to the Application Chart listed in this article to install the correct brake assembly and refer to the correct Figure for brake assembly indexing.

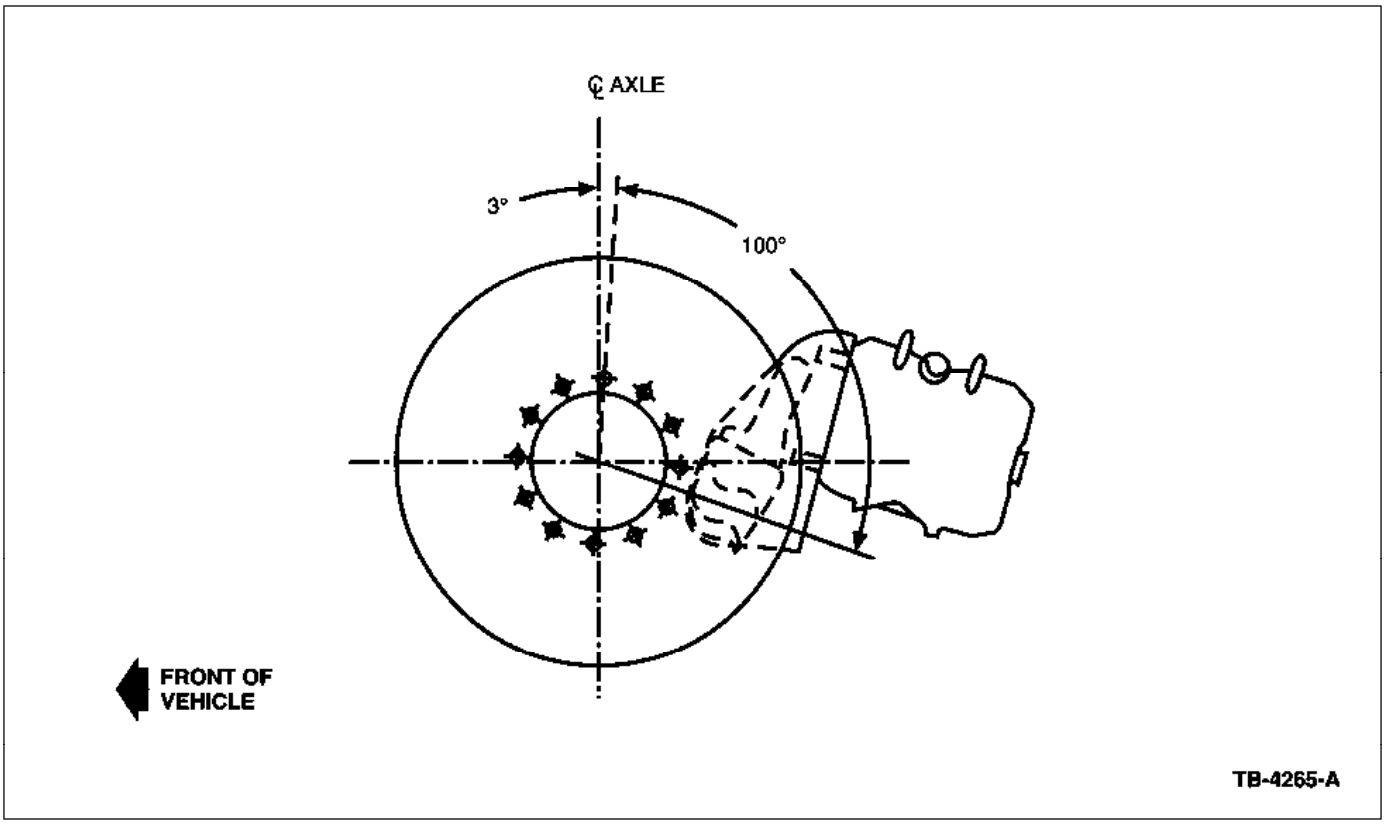


Figure 1 - Article 95-15-16

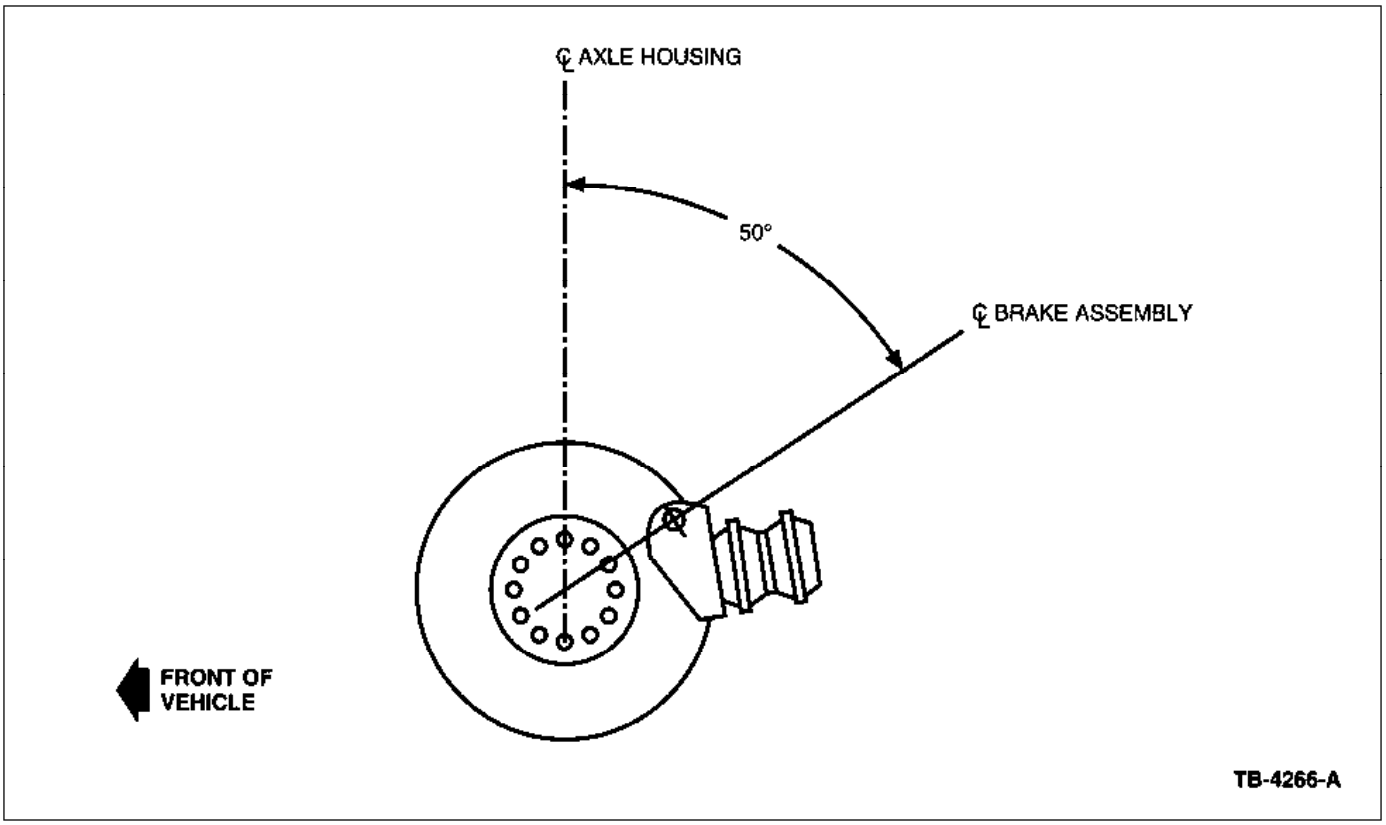


Figure 2 - Article 95-15-16

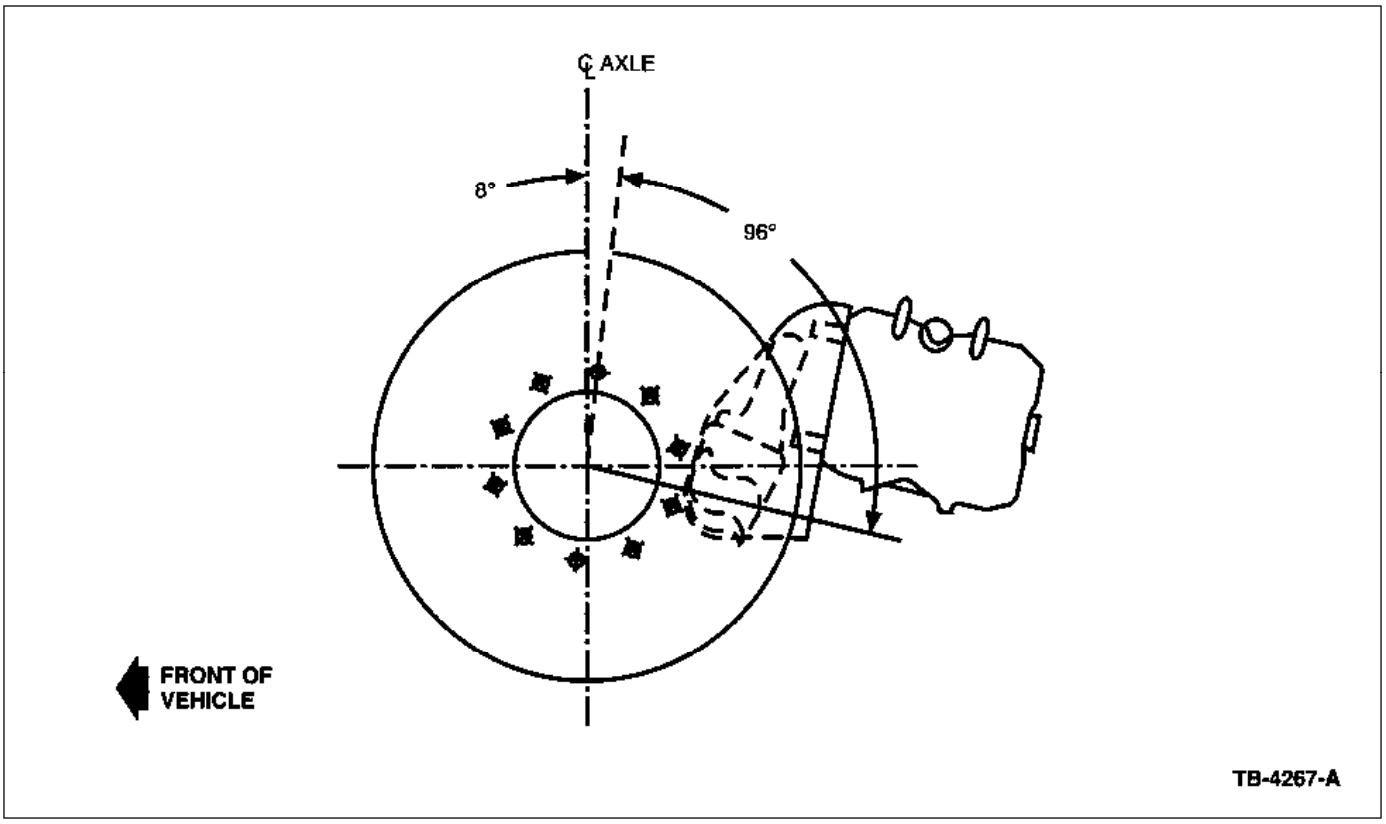


Figure 3 - Article 95-15-16

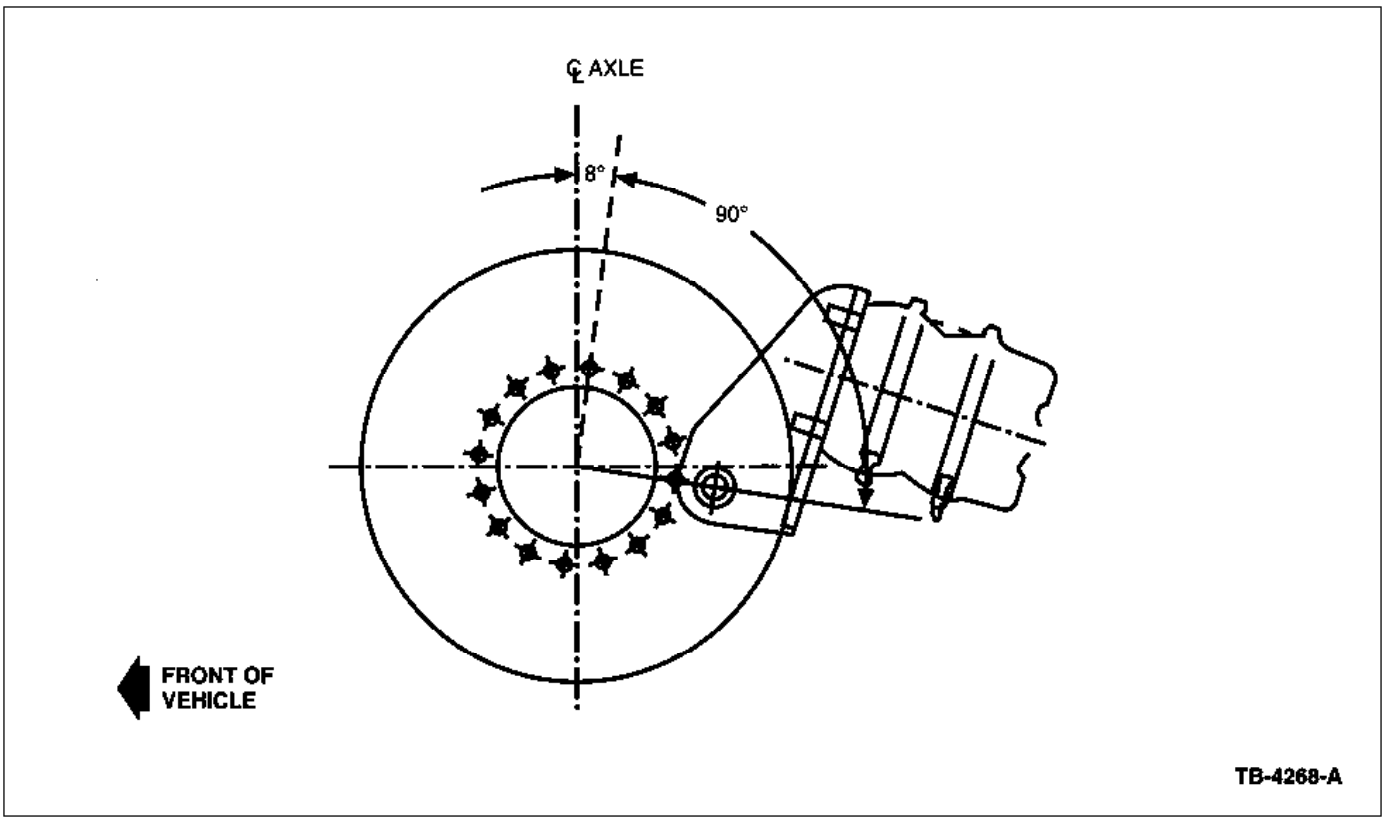


Figure 4 - Article 95-15-16

4. Install the correct brake assembly using the correct Figure. Install the twelve (12) 9/16-18x1.88 Grade 8 bolts and twenty four (24) flatwashers (Grade 8) that were removed in a previous step. Install twelve (12) new 9/16-18 Grade 8 torque prevailing nuts (55720-S2) and torque to 135-165 lb-ft

(183-224 N-m).

5. Install a new wheel seal into the hub and reinstall the hub/drum on the axle. For Rockwell Axles, adjust the wheel bearings as outlined in the appropriate Service Manual, Section 04-02B. For Eaton Axles, refer to the procedures found in this article.

6. Install the axle shaft, gasket, dowels, washers and nuts and torque the axle shaft nuts to the specifications listed in Section 04-02B of the appropriate Service Manual.

7. Install the brake chambers and slack adjusters and manually adjust the slack adjusters for initial brake adjustment.

8. Reinstall the wheels and torque to the proper specifications.

The following Service Procedures apply to all Eaton drive axle wheel and assemblies and has been taken from Eaton Bulletin #AXIB-9405.This bulletin details the following service and assembly procedures:

- Wheel end seal installation
- Wheel bearing adjustment for the three-piece tang-type, three-piece dowel-type and four-piece tang/dowel-type lockwasher wheel nut systems
- Wheel end lubrication

WARNING:
NEVER WORK UNDER A VEHICLE SUPPORTED BY ONLY A JACK. ALWAYS SUPPORT THE VEHICLE WITH STANDS. BLOCK THE WHEELS AND ENSURE VEHICLE WILL NOT ROLL BEFORE RELEASING THE BRAKES.

WHEEL END SEAL

NOTE:
WHEEL END SEALS CAN BE EASILY DAMAGED DURING HANDLING. LEAVE THE SEAL IN THE PACKAGE UNTIL INSTALLATION TO PREVENT DAMAGE OR CONTAMINATION.

1. Remove:
   a. The outer bearing and wheel.
   b. The inner bearing.
   c. The oil seal or grease retainer and discard.
   d. The old wear sleeve (two-piece design only) with a ball peen hammer and discard.

   CAUTION:
   DO NOT CUT THROUGH THE OLD WEAR SLEEVE. DAMAGE TO THE HOUSING MAY RESULT.

2. Inspect:
   a. The spindle journal and hub for scratches and burrs. Recondition with an emery cloth as required.

   NOTE:
   DEEP GOUGES CAN BE REPAIRED BY FILLING GOUGE WITH HARDENING GASKET CEMENT AND THEN SMOOTHING WITH AN EMERY CLOTH.

3. Clean:

a. The hub cavity and bearing bores before disassembly. Be sure to remove contaminants from all recesses and corners.

b. The bearing thoroughly with solvent and examine for damage. Replace damaged or worn bearings.

4. Before installation, lubricate the following with the same lubricant used in the axle sump:

a. The inner bearing.

b. The wheel seal following the directions provided by the seal supplier.

NOTE:
ALWAYS USE THE SEAL INSTALLATION TOOL SPECIFIED BY THE SEAL MANUFACTURER. USING AN IMPROPER TOOL CAN DISTORT OR DAMAGE THE SEAL AND CAUSE PREMATURE SEAL FAILURE.

WHEEL BEARING ADJUSTMENT

1. Identify the wheel nut system being installed. Three (3) systems are available:

a. Three-piece dowel-type wheel nut system, Figure 5.

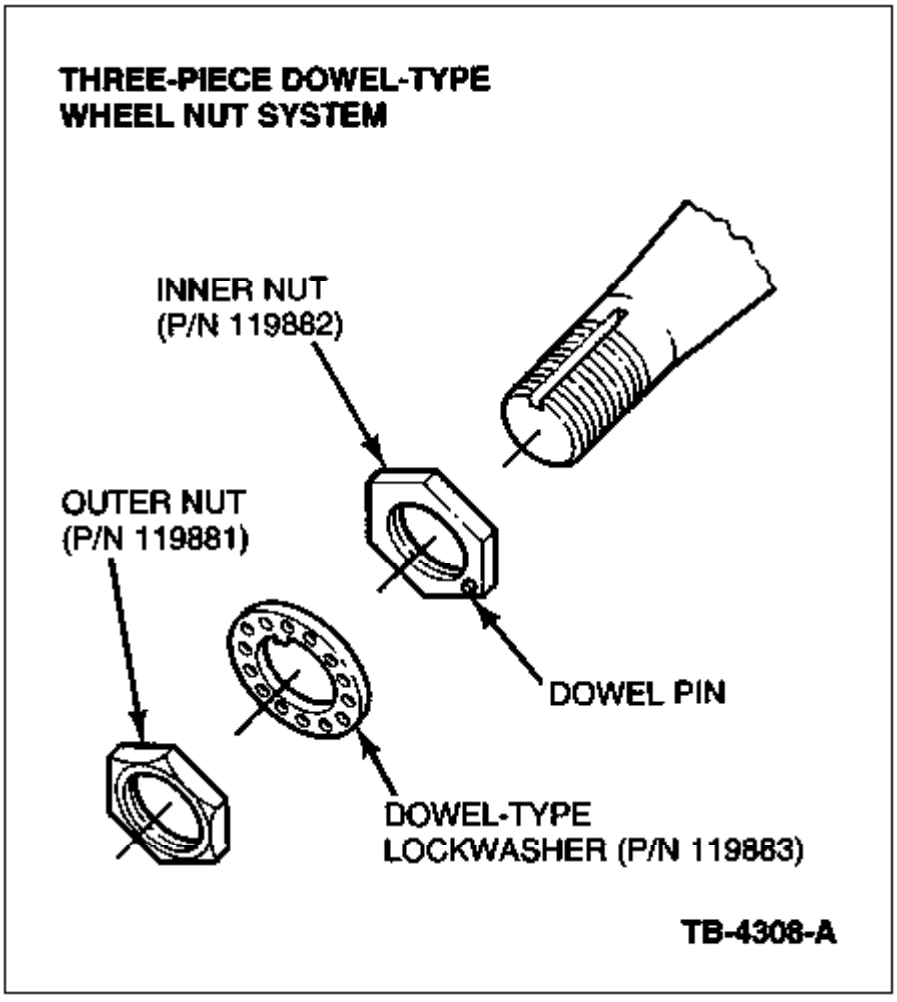


Figure 5 - Article 95-15-16

b. Three-piece tang-type wheel nut system, Figures 6 and 8.

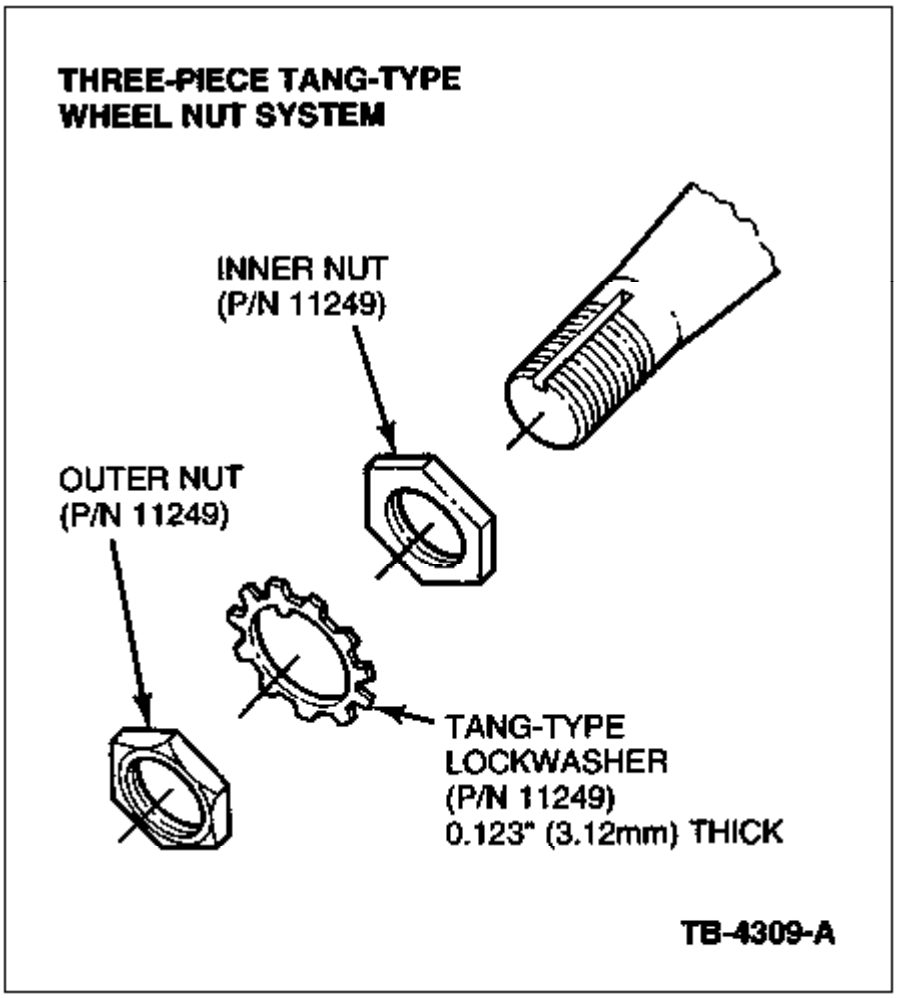


Figure 6 - Article 95-15-16

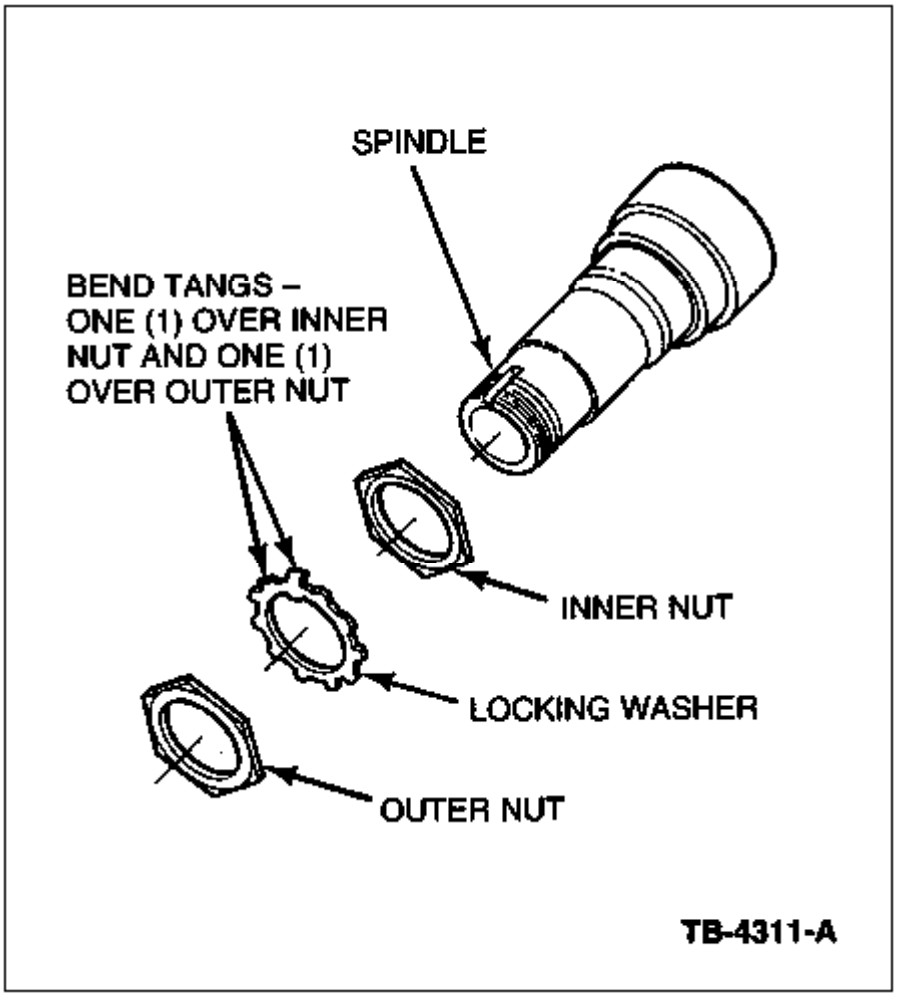


Figure 8 - Article 95-15-16

c. Four-piece tang/dowel-type wheel nut system, Figures 7 and 9.

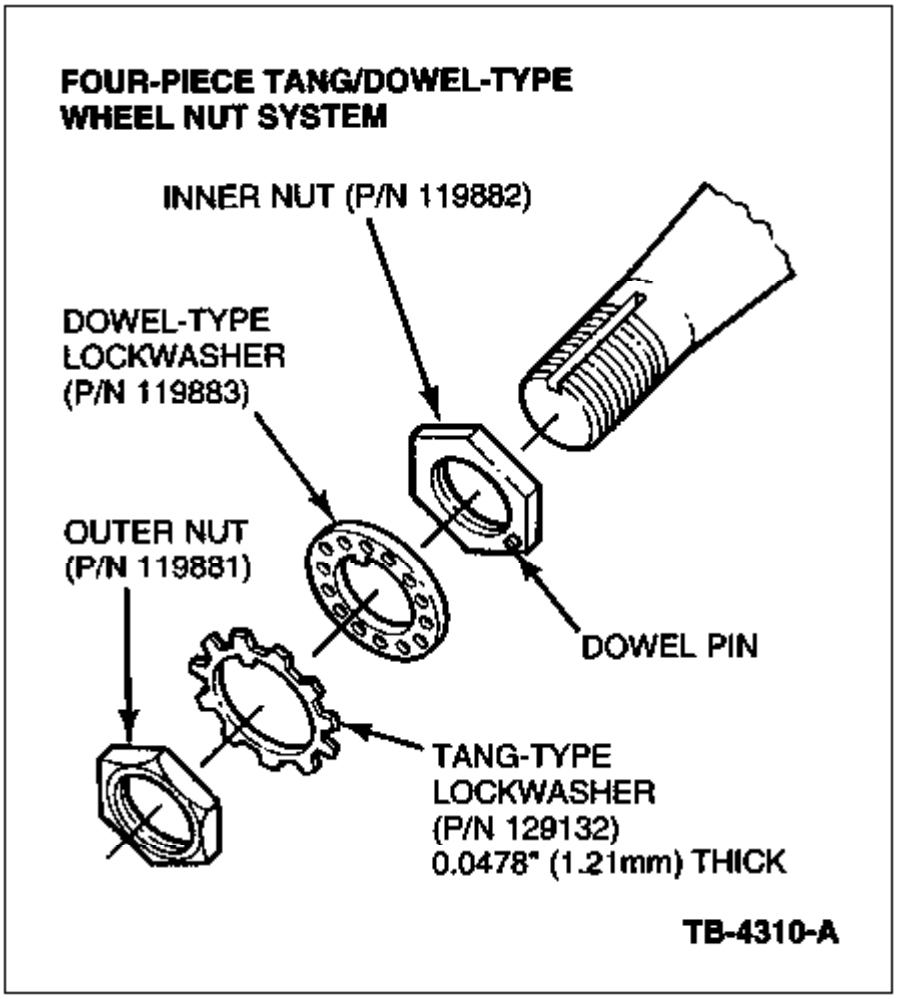


Figure 7 - Article 95-15-16

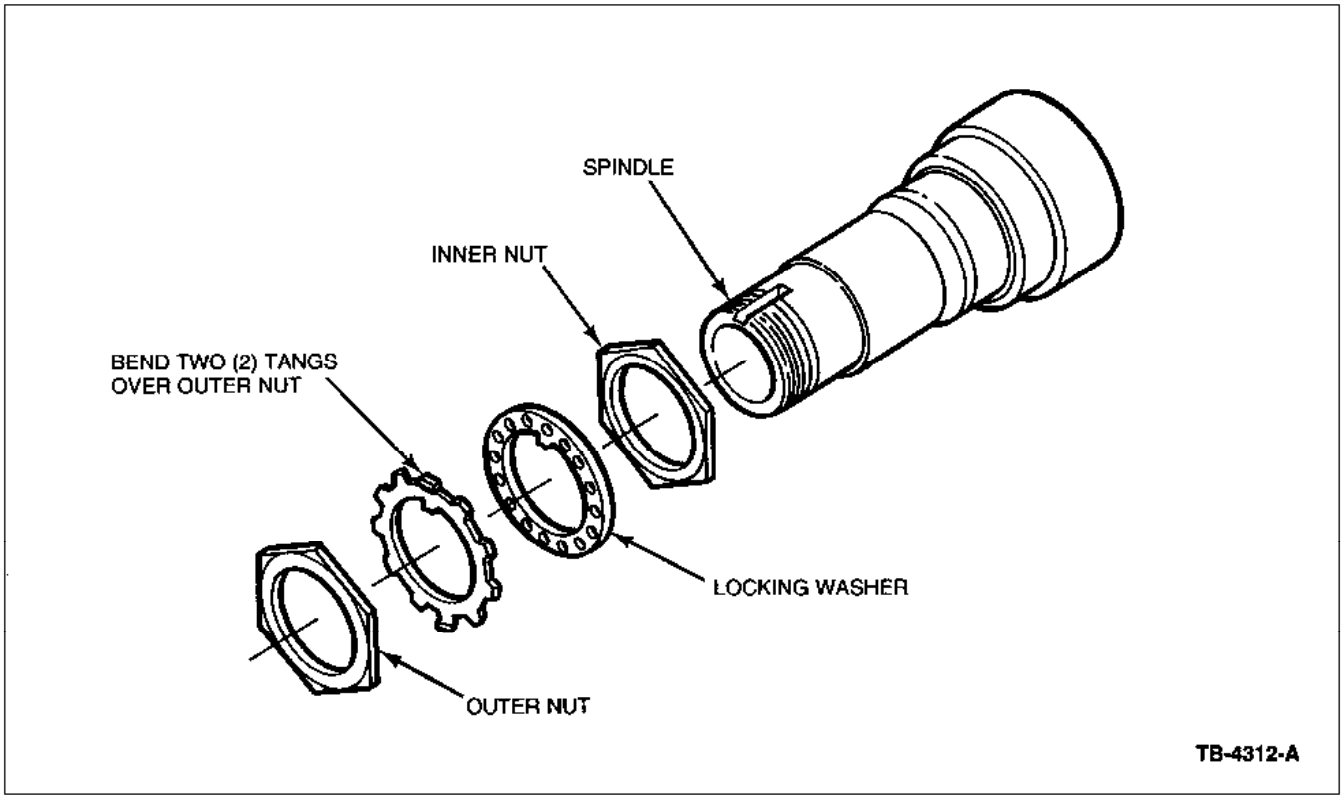


Figure 9 - Article 95-15-16

WARNING:
DO NOT MIX SPINDLE NUTS AND LOCKWASHERS FROM DIFFERENT SYSTEMS. MIXING SPINDLE NUTS AND LOCKWASHERS MAY CAUSE WHEEL SEPARATION.

NOTE:
THE LOCKWASHER FOR A FOUR-PIECE TANG/DOWEL-TYPE WHEEL NUT SYSTEM IS THINNER THAN THE LOCKWASHER FOR A THREE-PIECE TANG-TYPE WHEEL NUT SYSTEM AND IS NOT DESIGNED TO BEAR AGAINST THE INNER NUT.

2. Inspect the spindle and nut threads for corrosion and clean thoroughly or replace as required.

NOTE:
PROPER ASSEMBLY AND ADJUSTMENT IS NOT POSSIBLE IF THE SPINDLE NUT OR THREADS ARE CORRODED.

   a. Inspect the tang-type washer (if used). Replace the washer if the tangs are broken, cracked or damaged.

3. Install the hub and drum on the spindle with care to prevent damage or distortion to the wheel seal.

CAUTION:
A WHEEL DOLLY IS RECOMMENDED DURING INSTALLATION TO ENSURE WHEEL SEAL IS NOT DAMAGED BY THE WEIGHT OF THE HUB AND DRUM. NEVER SUPPORT THE HUB ON THE SPINDLE WITH JUST THE INNER BEARING AND SEAL. THIS CAN CAUSE DAMAGE TO THE SEAL AND CAUSE PREMATURE FAILURE.

   a. Completely fill the hub cavity between the inner and outer bearing races with the same lubricant used in the axle sump.

4. Before installation, lubricate the outer bearing with the same lubricant used in the axle sump.

NOTE:
LUBRICATE ONLY WITH CLEAN AXLE LUBRICANT OF THE SAME TYPE USED IN THE AXLE SUMP. DO NOT PACK BEARINGS WITH GREASE BEFORE INSTALLATION. GREASE WILL PREVENT THE PROPER CIRCULATION OF THE AXLE LUBRICANT AND MAY CAUSE WHEEL SEAL FAILURE.

5. Install:

   a. The outer bearing on the spindle.

   b. The inner nut on the spindle.

   c. Tighten the inner nut to 271 N-m (200 lb-ft) while rotating the wheel hub.

CAUTION:
NEVER USE AN IMPACT WRENCH TO ADJUST WHEEL BEARINGS. A TORQUE WRENCH IS REQUIRED TO ASSURE THE NUTS ARE PROPERLY TIGHTENED.

6. Back off the inner nut one (1) full turn. Rotate the wheel hub.

7. Retighten the inner nut to 68 N-m (50 lb-ft) while rotating the wheel hub.

8. Back off the inner nut exactly 1/4 turn.

NOTE:
THIS ADJUSTMENT PROCEDURE ALLOWS THE WHEEL TO ROTATE FREELY WITH 0.001-0.005" (0.025-0.127mm) END PLAY.

9. Install the correct lockwasher for the wheel nut system being used.

THREE-PIECE TANG-TYPE LOCKWASHER SYSTEM

1. Install the tang-type lockwasher on the spindle.

   NOTE:
   NEVER TIGHTEN THE INNER NUT FOR ALIGNMENT. THIS CAN PRELOAD THE BEARING AND CAUSE PREMATURE FAILURE.

2. Install the outer nut on the spindle and tighten to 339 N-m (250 lb-ft).

3. Verify end play. Refer to the End Play Verification Procedure in this article.

4. After verifying end play, secure wheel nuts by bending one (1) of the locking washer tangs over the outer wheel nut and another tang over the inner wheel nut as shown in Figure 8.

5. Install:

   a. New gasket at axle shaft flange.

   b. Axle shaft.

   c. Axle flange and tighten to specified torque.

6. Lubricate axle wheel ends. Refer to the Wheel End Lubrication Procedure in this article.

THREE-PIECE DOWEL-TYPE LOCKWASHER SYSTEM

1. Install the dowel-type lockwasher on the spindle.

   NOTE:
   IF THE DOWEL PIN AND WASHER ARE NOT ALIGNED, REMOVE THE WASHER, TURN IT OVER AND REINSTALL. IF REQUIRED, LOOSEN THE INNER NUT JUST ENOUGH FOR ALIGNMENT. NEVER TIGHTEN THE INNER NUT FOR ALIGNMENT. THIS CAN PRELOAD THE BEARING AND CAUSE PREMATURE FAILURE.

2. Install the outer nut on the spindle and tighten to 475 N-m (350 lb-ft).

3. Verify end play. Refer to the End Play Verification Procedure in this article.

4. Install:

   a. New gasket at axle shaft flange.

   b. Axle shaft.

   c. Axle flange and tighten to specified torque.

5. Lubricate axle wheel ends. Refer to the Wheel End Lubrication Procedure in this article.

FOUR-PIECE TANG/DOWEL-TYPE LOCKWASHER SYSTEM

1. Install the dowel-type washer on the spindle.

   NOTE:
   IF THE DOWEL PIN AND WASHER ARE NOT ALIGNED, REMOVE THE WASHER, TURN IT OVER AND REINSTALL. IF REQUIRED, LOOSEN THE INNER NUT JUST ENOUGH FOR ALIGNMENT. NEVER TIGHTEN THE INNER NUT FOR ALIGNMENT. THIS CAN PRELOAD THE BEARING AND CAUSE PREMATURE FAILURE.

2. Install the tang-type lockwasher on the spindle.

3. Install the outer nut on the spindle and tighten to 339 N-m (250 lb-ft).

4. Verify end play. Refer to the End Play Verification Procedure in this article.

5. After verifying end play, secure the outer nut by bending two (2) opposing (180 degrees apart) tangs of the locking washer over the outer nut as shown in Figure 9.

6. Install:

   a. New gasket at axle shaft flange.

   b. Axle shaft.

   c. Axle flange and tighten to specified torque.

7. Lubricate axle wheel ends. Refer to the Wheel End Lubrication Procedure in this article.

END PLAY VERIFICATION PROCEDURE

1. Verify that end play meets specification using a dial indicator. An indicator with 0.001" (0.025mm) resolution is required. Wheel end play is free movement of the tire and wheel assembly along the spindle axis.

2. Attach a dial indicator with its magnetic base to the hub or brake drum as shown in Figure 10.

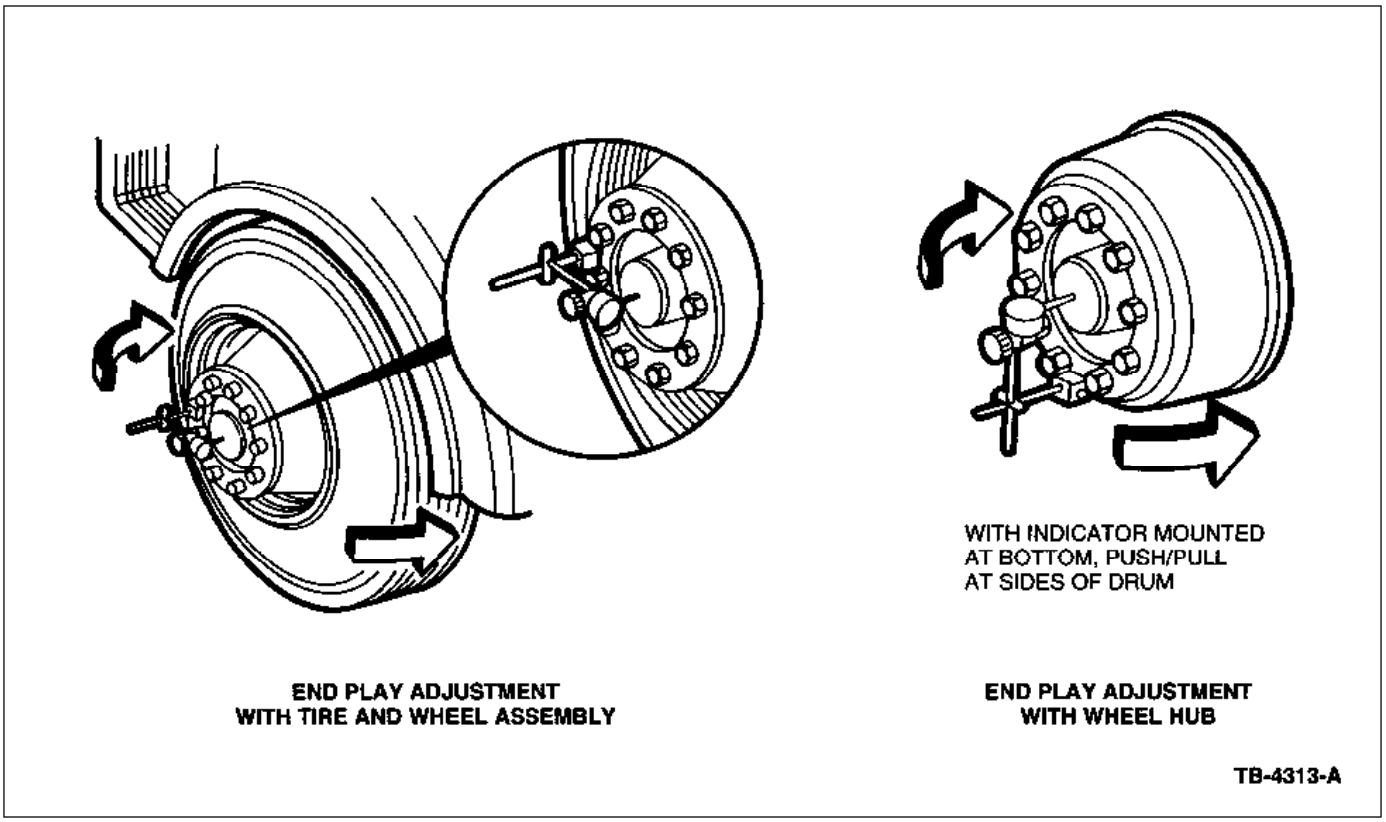


Figure 10 - Article 95-15-16

3. Adjust the dial indicator so that its plunger or pointer is against the end of the spindle with its line of action approximately parallel to the axis of the spindle.

4. Grasp the wheel assembly at the 3 o'clock and 9 o'clock positions. Push the wheel assembly in and out while oscillating it to seat the bearings. Read bearing end play as the total indicator movement.

5. If end play is not in specification, readjustment is required. Refer to the End Play Readjustment Procedure in this article.

END PLAY READJUSTMENT PROCEDURE

EXCESSIVE END PLAY

If the end play is greater than 0.005" (0.127mm), remove the outer nut and pull the lockwasher away from the inner nut but not off the spindle. Tighten the inner nut to the next alignment hole of the dowel-type washer (if used). Reassemble the washer and retorque the outer nut. Verify end play with a dial indicator.

INSUFFICIENT END PLAY

If the end play is not present, remove the outer nut and pull the lockwasher away from the inner nut but not off the spindle. Loosen the inner nut to the next alignment hole of the dowel-type washer (if used). Reassemble the washer and retorque the outer nut. Verify end play with a dial indicator.

FINE TUNING END PLAY

If, after performing the readjustment procedures, end play is still not within the 0.001-0.005" (0.025-0.127mm) range, disassemble and inspect the components. If parts are found to be defective, replace the defective

parts, reassemble and repeat wheel bearing adjustment procedure. Verify end play with a dial indicator.

WHEEL END LUBRICATION

NOTE:
BEFORE OPERATING THE AXLE, THE WHEEL HUB CAVITIES AND BEARINGS MUST BE LUBRICATED TO PREVENT FAILURE.

When wheel ends are serviced, follow Eaton's wheel end lubricating procedure before operating the axle.

Eaton axles may be equipped with either of the following two (2) wheel end designs:

- Wheel ends with an oil fill hole, Figure 11

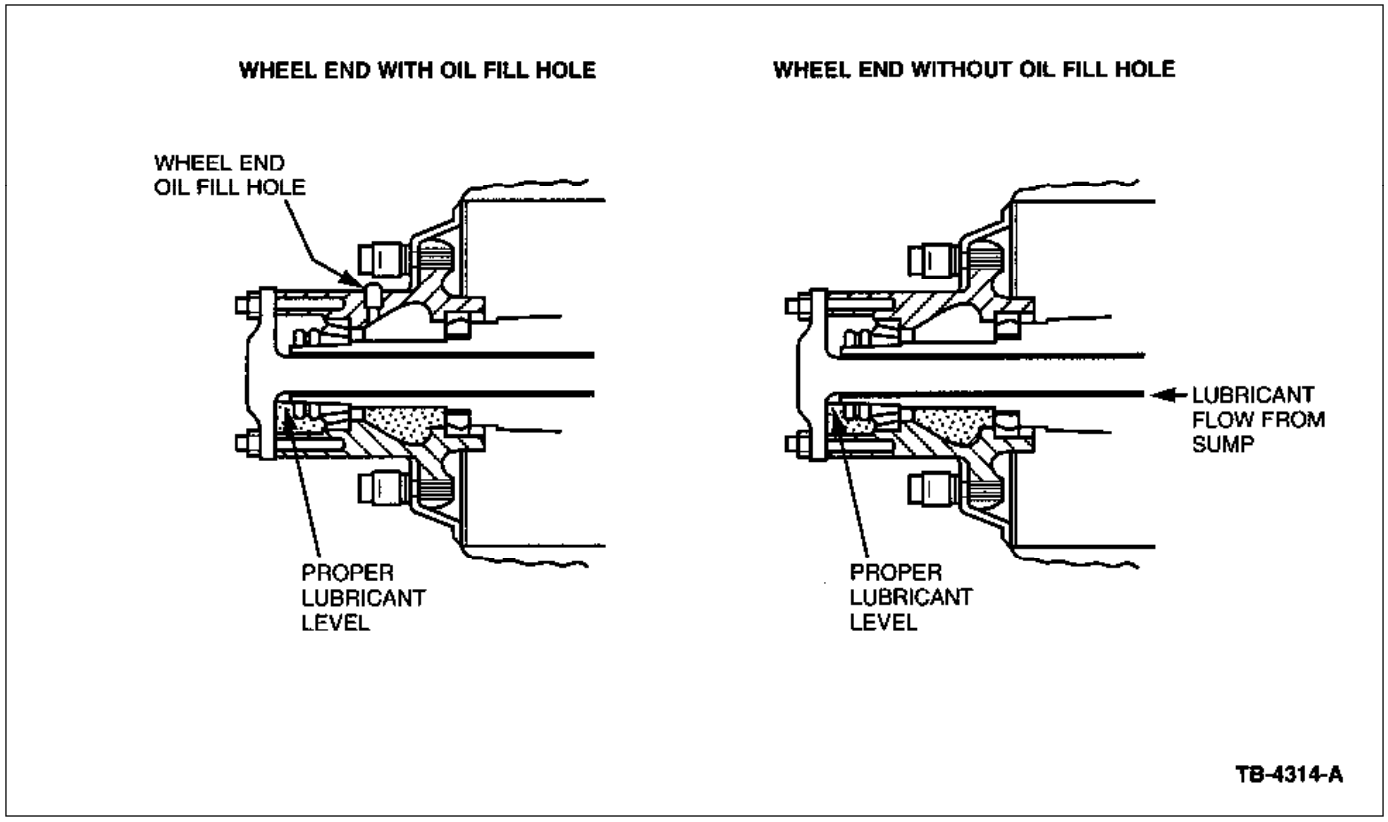


Figure 11 - Article 95-15-16

- Wheel ends without an oil fill hole, Figure 11

WHEEL ENDS WITH AN OIL FILL HOLE

1. Rotate the wheel end hub until the oil fill hole is up.
2. Remove the oil fill plug.
3. Pour 1/2 pint of axle sump lubricant into each hub through the wheel end fill hole.
4. Install oil fill plug and tighten to the specified torque.

WHEEL ENDS WITHOUT AN OIL FILL HOLE

1. With the axle level and wheels assembled, add lubricant through filler hole located in axle housing cover until fluid is level with the bottom of the filler hole.

2. Raise the left side of the axle 6" (152mm) or more. Hold that position for 1 minute, Figure 12.

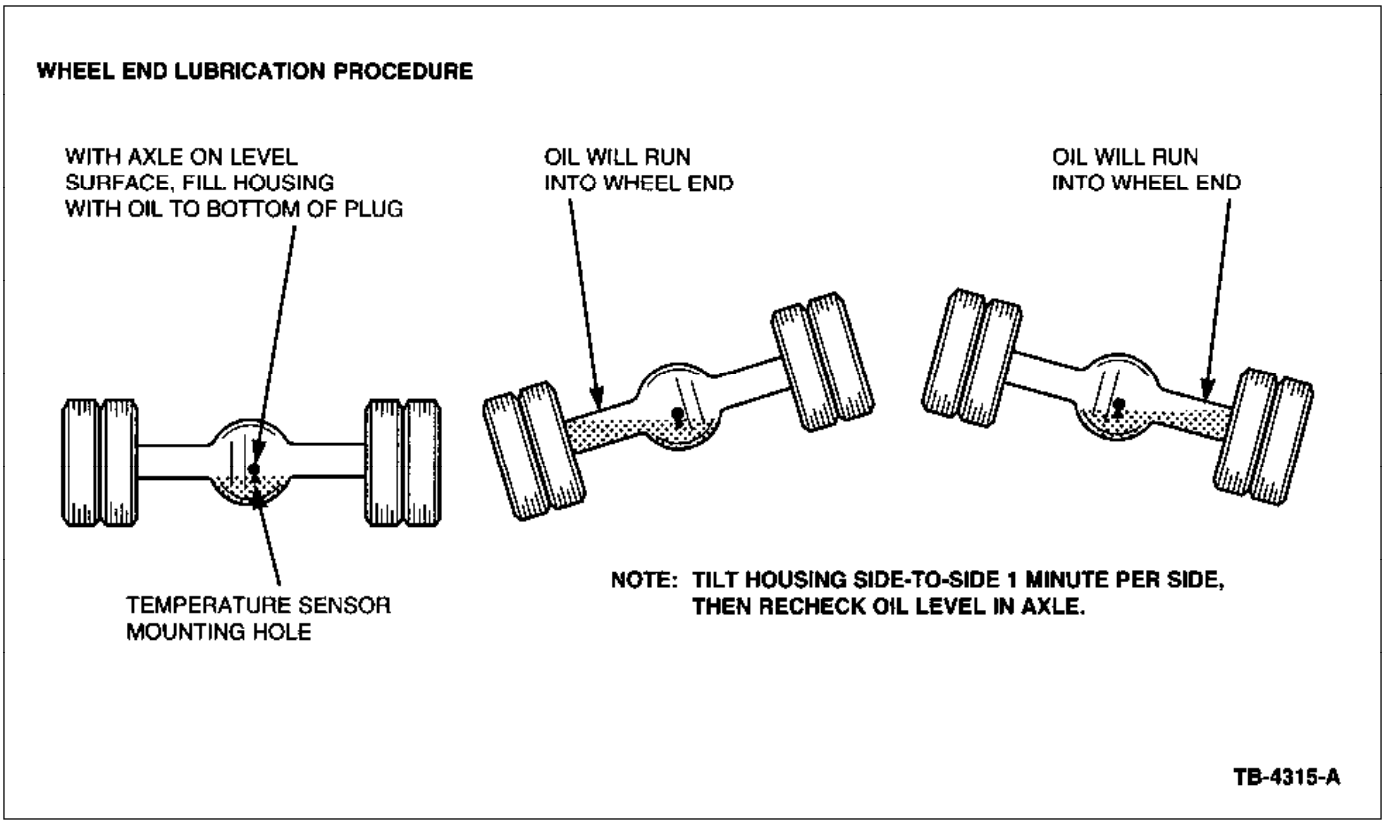

WHEEL END LUBRICATION PROCEDURE
WITH AXLE ON LEVEL SURFACE, FILL HOUSING WITH OIL TO BOTTOM OF PLUG
OIL WILL RUN INTO WHEEL END
OIL WILL RUN INTO WHEEL END
TEMPERATURE SENSOR MOUNTING HOLE
NOTE: TILT HOUSING SIDE-TO-SIDE 1 MINUTE PER SIDE, THEN RECHECK OIL LEVEL IN AXLE.
TB-4315-A

Figure 12 - Article 95-15-16

3. Lower the left side back to its original position.

4. Raise the right side of the axle 6" (152mm) or more. Hold that position for 1 minute, Figure 12.

5. Lower the right side back to its original position.

6. With the axle level, add lubricant through the axle housing cover filler hole until the fluid is level with the bottom of the filler hole.

NOTE:
AXLES WITHOUT WHEEL END FILL HOLES WILL REQUIRE APPROXIMATELY 2.5 ADDITIONAL PINTS OF LUBRICANT TO BRING THE LEVEL EVEN WITH THE BOTTOM OF THE FILLER HOLE.

OTHER APPLICABLE ARTICLES: NONE

WARRANTY STATUS: INFORMATION ONLY

OASIS CODES: 301000, 302000

95-15, ***Publication Date: JULY 31, 1995***

Leaks - Oil - Front Cover Or Gear Housing - Vehicles With FD1460 Engine	Article No. 95-15-17

MEDIUM/HEAVY TRUCK:
1992-95 CARGO SERIES, F SERIES, L SERIES

ISSUE:
There may be an oil leak from the front cover area on some vehicles with FD1460 engines. Typical repair procedures for replacing gaskets may be ineffective. A front engine cover design revision has occurred and was put into production in September 1994. A list of service changes to resolve this condition are as follows:

- New service steel-edged moulded rubber gasket
- New formed-in-place front cover gasket
- New "sunrise" gear cover
- Improved capscrews with a property class of 10.9
- Improved air compressor mounting

ACTION:
If service is required, replace the front cover and gasket with the improved design. If required, also replace the gear housing. Refer to the following Service Procedure for details.

NOTE:
FOR THIS REPAIR TO BE COMPLETELY EFFECTIVE, ALL THE NEW COMPONENTS LISTED ABOVE MUST BE USED.

SERVICE PROCEDURE

1. Remove the cooling module. Refer to the appropriate Service Manual, Section 03-03 for details. On certain vehicles, it may be necessary to remove the hood to gain access. Refer to the appropriate Service Manual, Section 01-02 for details.

2. Remove the front cover and gear housing, including the camshaft, air compressor, fuel injection pump, vibration damper and main drive pulley, valve covers, valve tappets, push rods and rocker lever assemblies. Refer to the appropriate Service Manual, Section 03B-01.

3. Inspect the gear housing for damage such as cracking around the mounting holes. If condition of the housing is good, clean all gasket material from the front cover and reuse the housing. Use a wire wheel on a drill motor at low speed to clean the RTV out of the gear cover grooves. If the gear housing is cracked or damaged, replace the housing with a new gear housing (F3HZ-6019-J).

4. If it is not already plugged, plug the upper dowel hole in the gear housing. Refer to Figure 1. Install a dowel pin (3900257-CF) using Loctite 227. The dowel pin should be inserted until it is just below the surface of the gear housing that faces the gear cover.

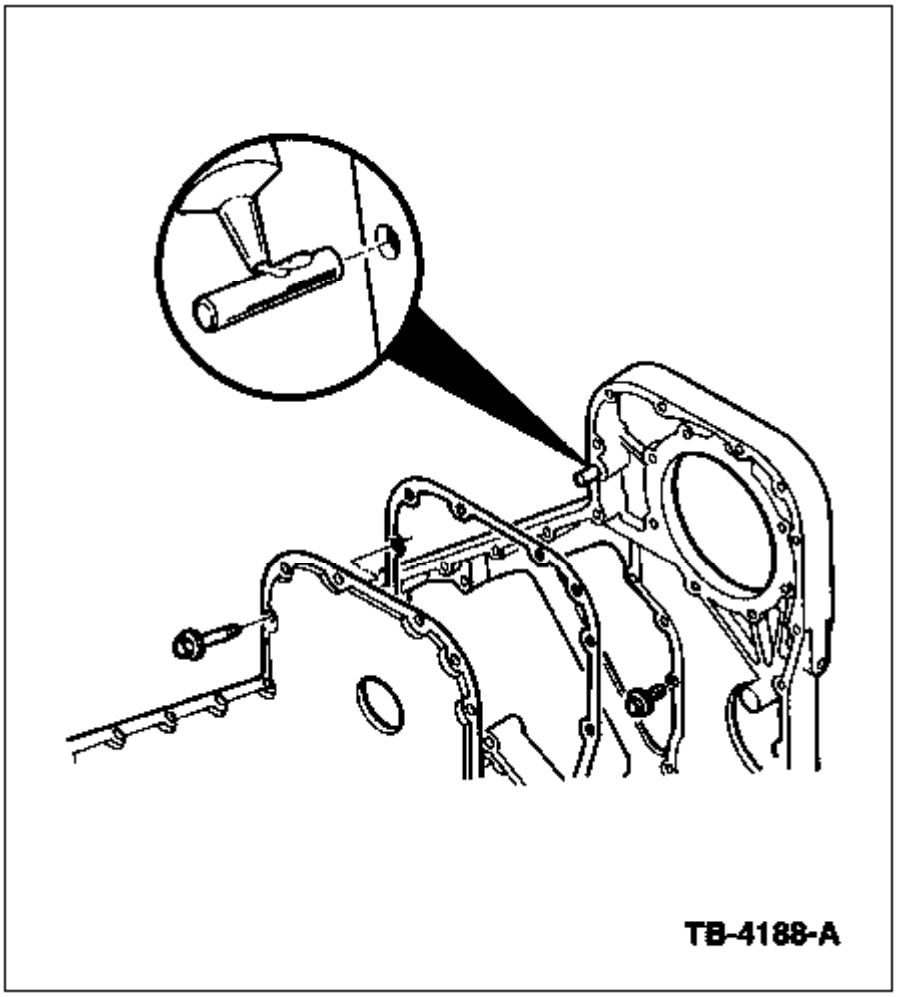


Figure 1 - Article 95-15-17

5. Install the gear housing gasket (F2HZ-6020-AA) and the gear housing. Use the new Loctite coated bolts (3926846-CF) and torque to 35 N-m (26 lb-ft). Refer to Figure 5.

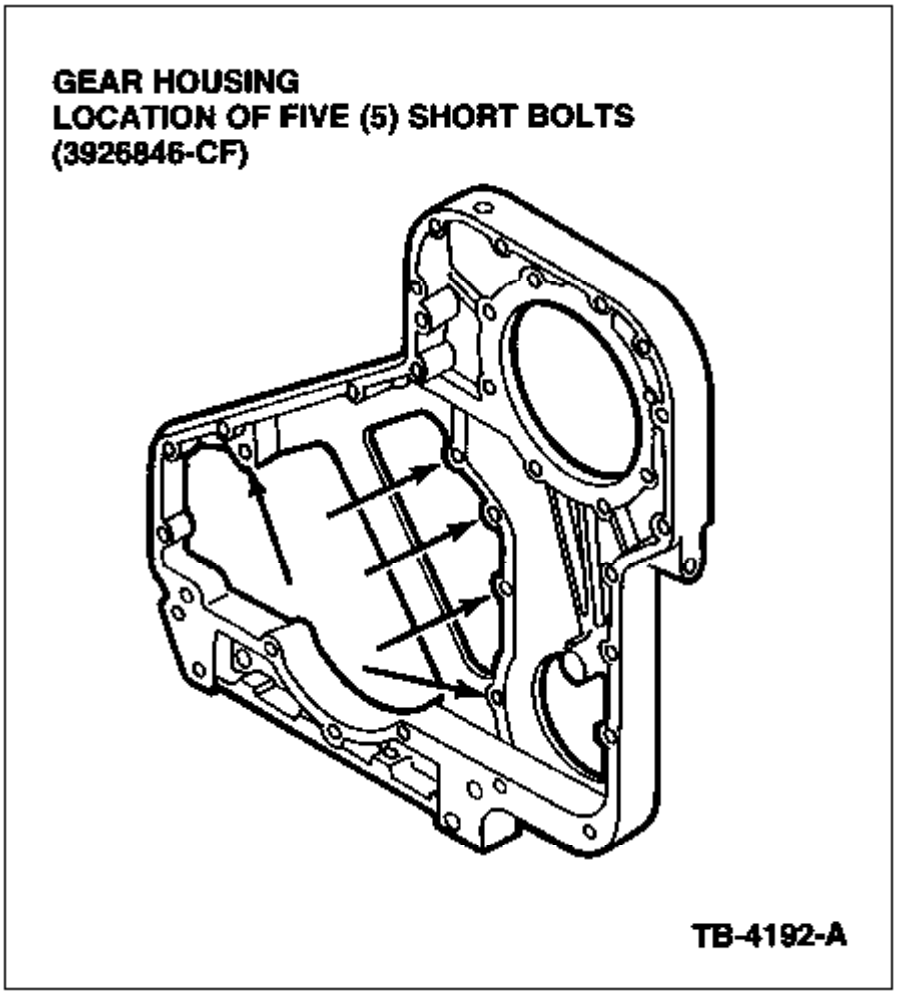


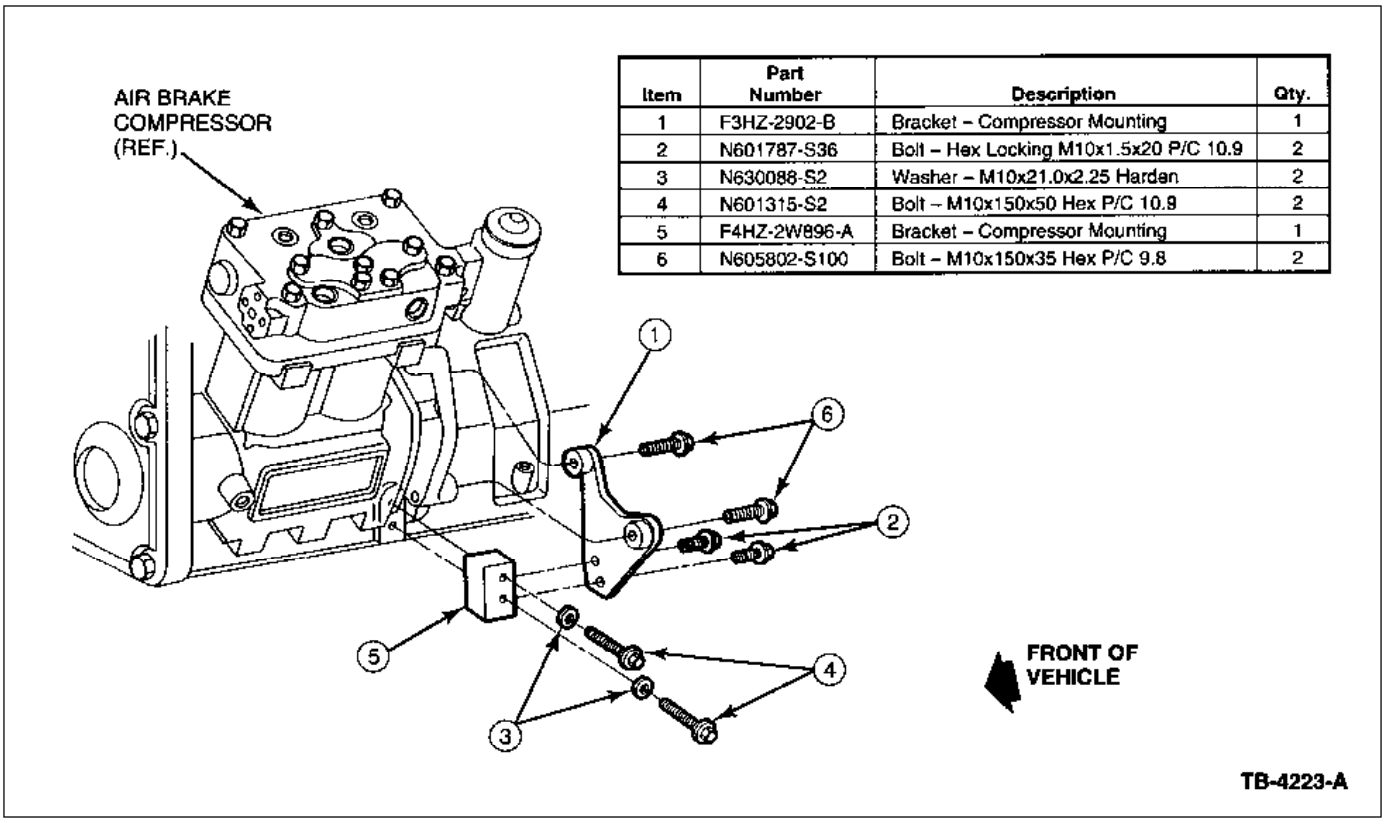
Figure 5 - Article 95-15-17

6. Install camshaft, air compressor, fuel injection pump, valve tappets, push rods, rocker lever assemblies and valve covers.

7. Use two (2) new (N807763-S43B) studs in the gear housing for the air compressor mounting. Use Loctite 277 on the studs and install the studs into the gear housing to the shoulder of the stud.

8. Install the air compressor mounting gasket (F3HZ-3K506-C). Install the compressor using two (2) new hex flanged torque prevailing nuts (N620483-S2). Torque the nuts to 60-95 N-m (44-70 lb-ft).

NOTE:
CHECK THE REAR SUPPORT OF THE AIR COMPRESSOR BEFORE REINSTALLING. IF THE BRACKET THAT ATTACHES TO THE COMPRESSOR (FIGURE 6, ITEM 1) HAS ONLY ONE (1) MOUNTING POINT WHERE IT ATTACHES TO THE COMPRESSOR, IT NEEDS TO BE CHANGED TO THE TWO-POINT SYSTEM (FIGURE 6). THE PARTS NEEDED FOR THE TWO-POINT SYSTEM ARE F3HZ-2902-B AND F4HZ-2W896-A (BOTH BRACKETS).



Item	Part Number	Description	Qty.
1	F3HZ-2902-B	Bracket – Compressor Mounting	1
2	N601787-S36	Bolt – Hex Locking M10x1.5x20 P/C 10.9	2
3	N630088-S2	Washer – M10x21.0x2.25 Harden	2
4	N601315-S2	Bolt – M10x150x50 Hex P/C 10.9	2
5	F4HZ-2W896-A	Bracket – Compressor Mounting	1
6	N605802-S100	Bolt – M10x150x35 Hex P/C 9.8	2

Figure 6 - Article 95-15-17

9. Install the compressor rear support mounting brackets, using Loctite 242. Coat the bolts removed or use new bolts shown in Figure 6. Only install the bolts finger tight. The total alignment of the brackets is critical. The mounting holes in the brackets allow for some movement for alignment. Align the brackets before tightening the bolts to ensure there are no binds in the brackets/compressor. Torque the bolts to 61 N-m (45 lb-ft).

10. If the power steering pump has been removed, use a new power steering pump gasket (F4HZ-3K506-C) and install pump on the back of the compressor. Use Loctite 242 to coat each bolt and torque to 61 N-m (45 lb-ft).

11. Install the front cover seal (F3HZ-6700-B) as outlined in the appropriate Service Manual, Section 03A, into the Sunrise Front Engine Cover.

12. Using Loctite 5900 (or Cummins Three-Bond Sealer 3823494), place a 4mm bead along the entire flange of the gear cover. Refer to Figure 2.

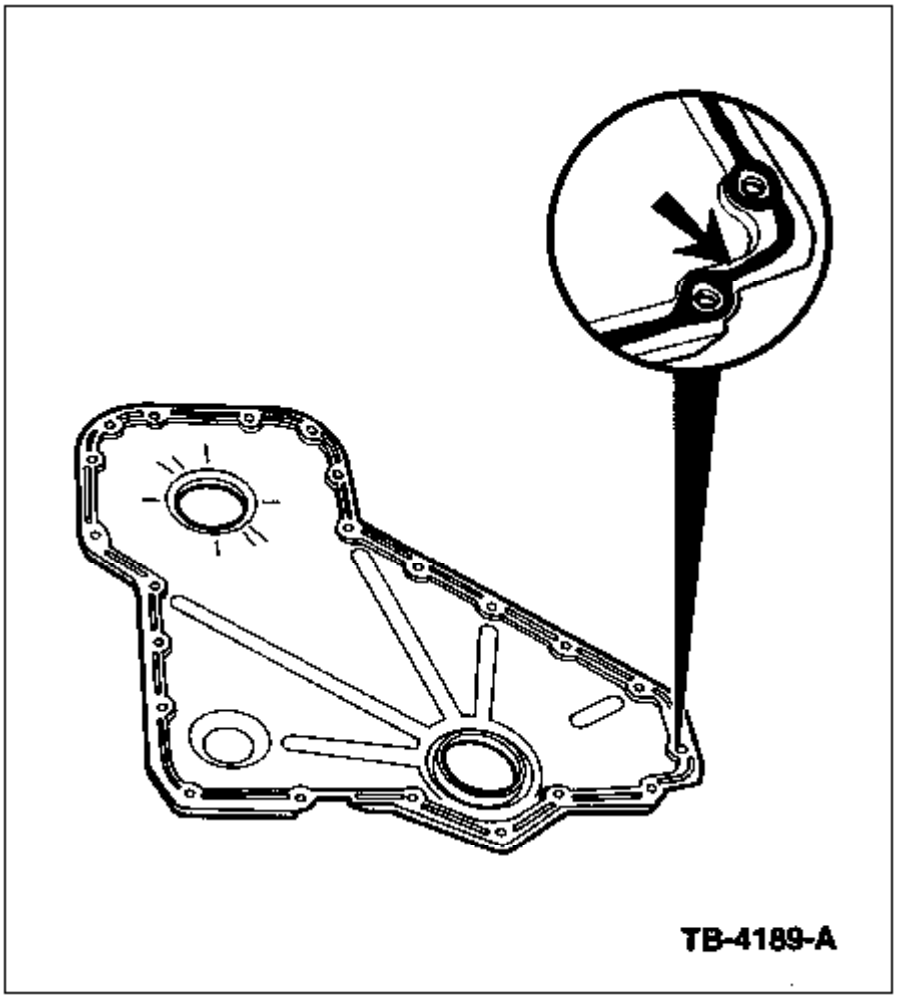


Figure 2 - Article 95-15-17

13. Follow the grooves in the flange and circle each of the bolt holes with Loctite 5900 (or Cummins Three-Bond Sealer 3823494).

NOTE:
THE FRONT COVER MUST BE INSTALLED AND BOLTS TORQUED WITHIN 15 MINUTES FROM WHEN LOCTITE 5900 (OR CUMMINS 3823494) WAS APPLIED. IF THE LIQUID GASKET APPEARS "SKINNED OVER", IT WILL NOT CREATE A GOOD SEAL. IT MUST BE CLEANED FROM THE FRONT COVER AND NEW LIQUID GASKET APPLIED AND INSTALLED IN 15 MINUTES.

14. Install the front cover and torque all of the bolts. Ensure the long and short bolts are in the proper location. Refer to Figure 4 for bolt locations. Torque the long bolts (3926863-CF) with the 11mm head to 35 N-m (26 lb-ft). Torque the short bolts (3925883-CF1) with the 10mm head to 24 N-m (18 lb-ft).

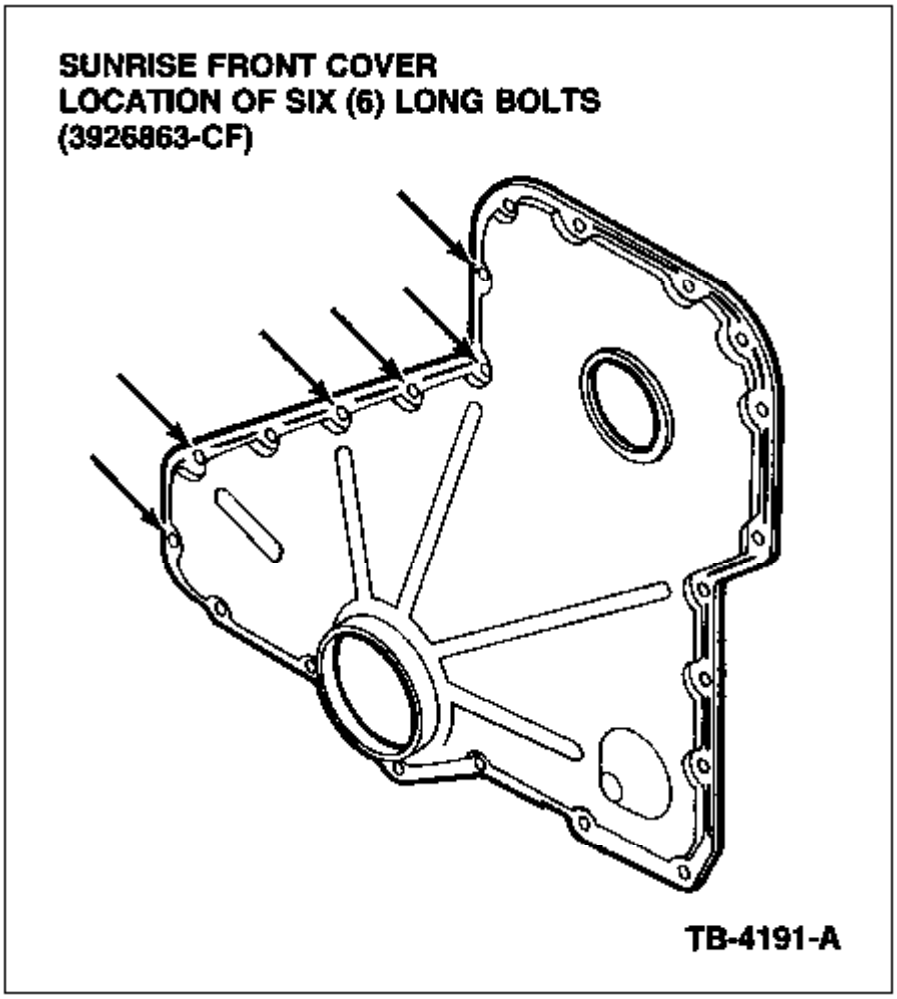


Figure 4 - Article 95-15-17

NOTE:
BE SURE TO USE A TORQUE WRENCH WHEN TIGHTENING THE HIGH STRENGTH BOLTS. OVER-TIGHTENING MAY LEAD TO STRETCHING THE BOLTS. THE COATING ON THE BOLTS REDUCES FRICTION DURING TIGHTENING SO TIGHTENING BY "FEEL" MAY RESULT IN OVER-TIGHTENING. A TORQUE WRENCH MUST BE USED TO ENSURE PROPER RETENTION LEVEL IS ACHIEVED ON ALL ATTACHING FASTENERS.

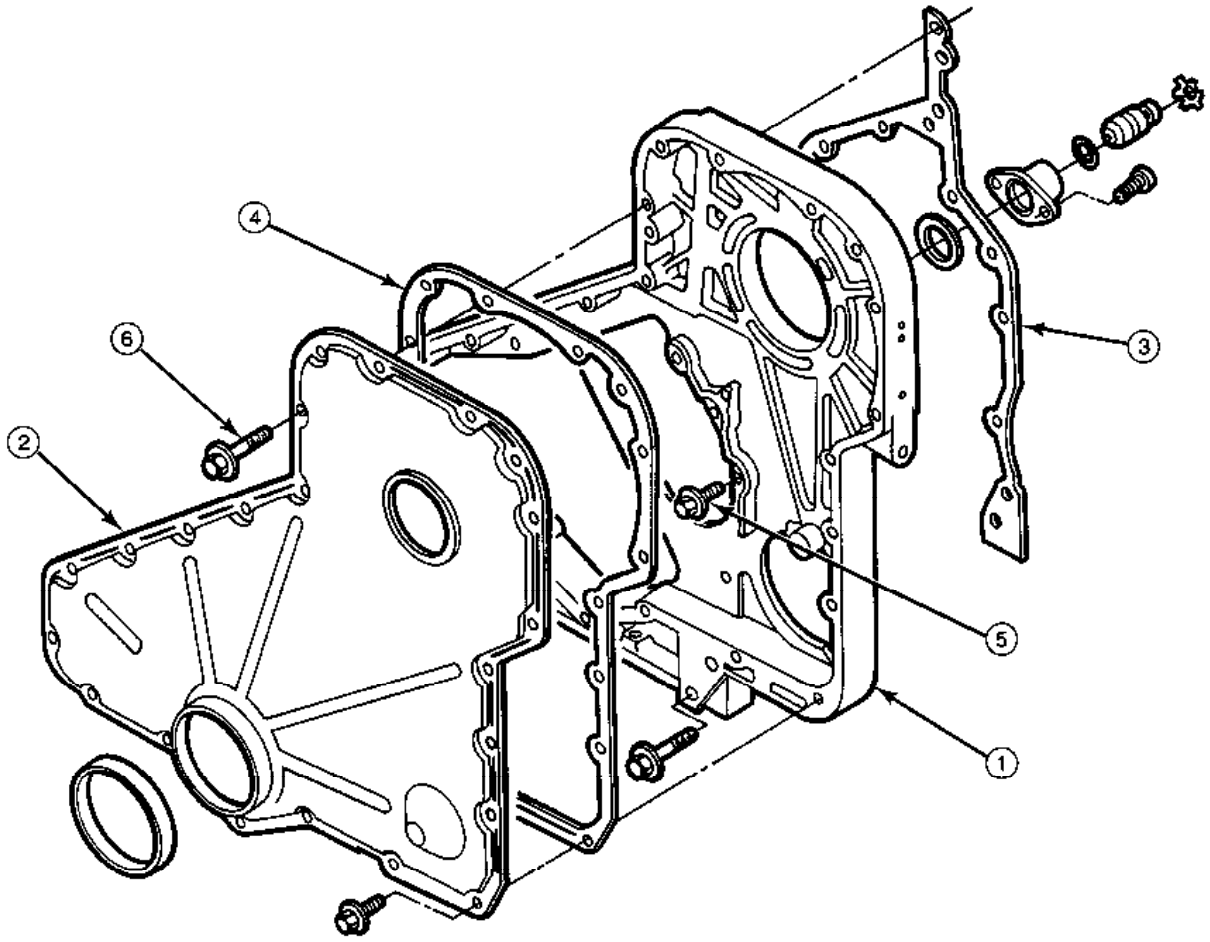
15. Reinstall all components removed through this process according to the appropriate Service Manual procedures.

The high strength coated bolts (3926846-CF and 3926863-CF) may be reused with the following guidelines:

- Check the bolt for any sign of stretching or damage to the threads. If the bolt is damaged, do not reuse.
- The threads of the bolts should be wiped clean, removing any oil or debris and excess build-up of old Loctite. Bolts do not have to be cleaned down to the metal.
- Apply Loctite 242 or 262 (Loctite 262 is a permanent-type thread sealer) on the bolt threads.
- Use a torque wrench and torque to 35 N-m (26 lb-ft).

Item	Description	Quantity	Old Ford Service Part No.	Old Cummins Part No.	New Ford Service Part No.	New Cummins Part No.
1	Gear Housing	1	F3HZ-6019-J	3916380	F3HZ-6019-J	3926518
2	Front Cover	1	F3HZ-6019-K	3916193	F2HZ-6019-AA	3926847
3	Gasket – Gear Housing-to-Block	1	F3HZ-6020-E	3281721	F2HZ-6020-AA	3929253
4	Gasket – Front Cover-to-Gear Housing	1	F3HZ-6020-F	3917780	F6AZ-19562-AA ****	3823494
5	Gear Housing Bolts (Short)	5	3900630-CF	3900630	3926846-CF	3926846
6	Gear Housing Bolts (Long)	6	3900633-CF	3900633	3926863-CF	3926863

**** Also available as Loctite 5900



GEAR HOUSING

TB-4190-A

Figure 3 - Article 95-15-17

OTHER APPLICABLE ARTICLES: NONE

SUPERSEDES: 95-3-24

WARRANTY STATUS: Eligible Under Basic Warranty Coverage

LABOR ALLOWANCE

DEALER CODING

OASIS CODES: 401000, 499000

Bulletin Contents

TSB Article 95-15-18 has been superseded by Article 95-19-18.

95-16, ***Publication Date: AUGUST 14, 1995***

• **Brakes - Front - Front Axle Shudder/Vibration When Brakes Are Applied - Vehicles Equipped With 14,600, 16,000 And 18,000 Lb Front Axle Assemblies Equipped With Rockwell 16.5 X 6 Inch Brake Assemblies** • **Vibration/Shudder - Front Axle Shudder/Vibration When Brakes Are Applied - Vehicles Equipped With 14,600, 16,000 And 18,000 Lb Front Axle Assemblies Equipped With Rockwell 16.5 X 6 Inch Brake Assemblies**	**Article No. 95-16-20**

MEDIUM/HEAVY TRUCK:
1990-95 L SERIES

ISSUE:
The front end may shudder/vibrate on some vehicles equipped with the above mentioned axles when the brakes are applied. This condition will be evident at low speeds and low deceleration rates when the front end is lightly loaded (with respect to the gross axle weight rating).

ACTION:
Replace the front brake lining material with a revised material which has different friction properties to properly match a lightly loaded front end with the torque of the front brakes. Using these linings does not reduce the GAWR of the applicable axle and is offered as a DSO option. Refer to the following for service details.

SERVICE PROCEDURE

1. Remove the front tires, hubs, brake drums and shoes as outlined in the L-Series Service Manual, Sections 04-01 and 06-08D.

2. Re-line the brake shoes using the applicable brake lining kit.

3. Check the condition of the brake return springs and rollers, replace if necessary.

4. Reinstall the brake shoes, return springs, rollers and brake drums as outlined in the L-Series Service Manual, Section 06-08D.

5. Check the condition of the wheel bearings, replace if necessary. Install a new wheel seal (and wear ring, if applicable) into the hub. Install the hub and adjust the bearings as outlined in the Service Manual, Section 04-01.

6. Install wheels and torque nuts to the specifications listed in the Service Manual, Section 04-01.

OTHER APPLICABLE ARTICLES: NONE

WARRANTY STATUS: Eligible Under Basic Warranty Coverage

LABOR ALLOWANCE

DEALER CODING

OASIS CODES: 301000, 702000, 702100, 703000, 703400

95-17, ***Publication Date: AUGUST 28, 1995***

• **Reduced Power - Loss Of Turbocharger Boost - Charge Air Tubing Chafing On Generator Bracket - Detroit Diesel Series 60 Engines** • **Engine - Detroit Diesel Series 60 - Charge Air Tubing Chafing On Generator Bracket**	**Article No. 95-17-12**

MEDIUM/HEAVY TRUCK:
1994-95 L SERIES

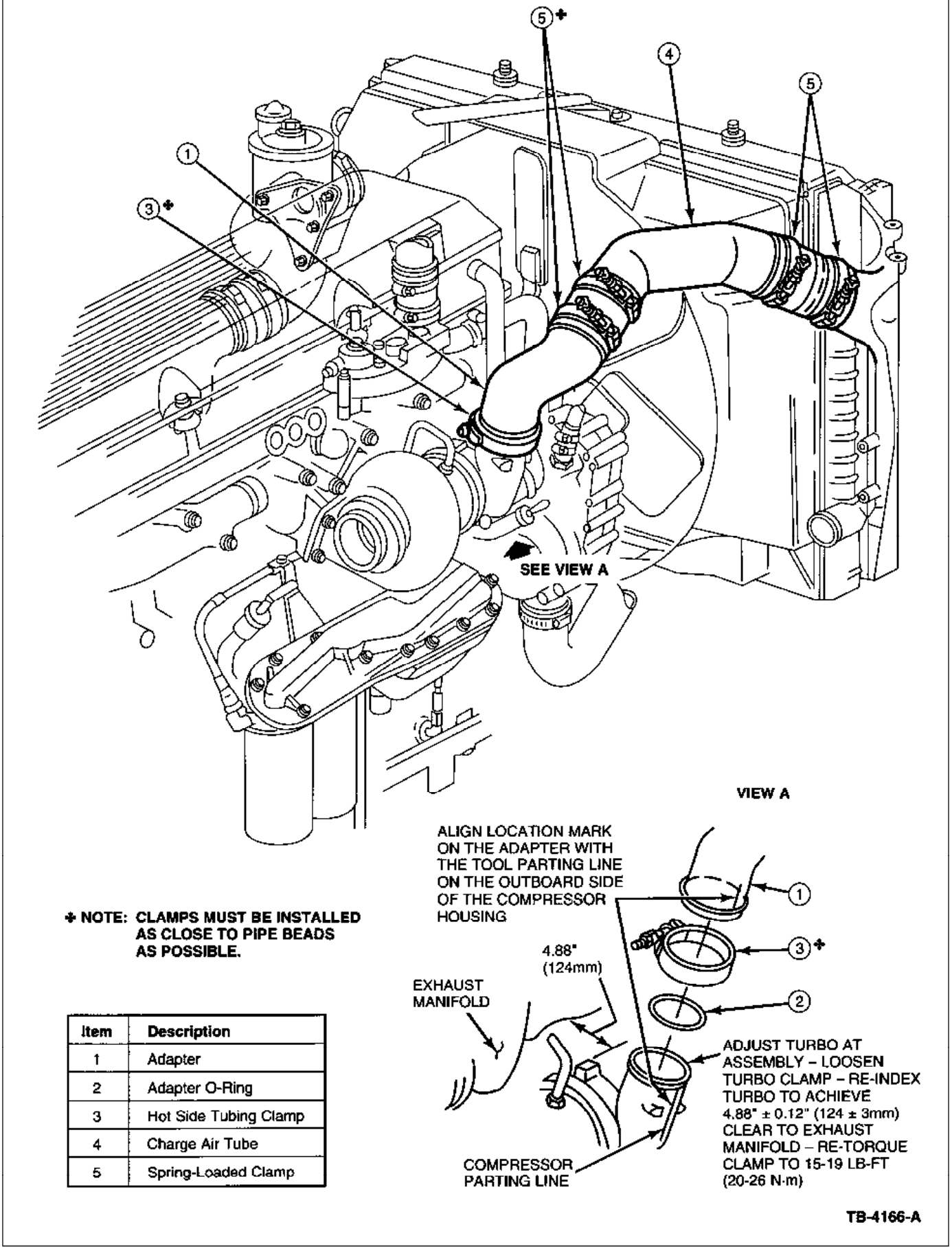
ISSUE:
On some vehicles equipped with the Detroit Diesel Series 60 engine, the charge air intake tube may be out of position. This may allow the tube to chafe on the generator support brackets, possibly perforating the tube and creating a loss of turbocharger boost pressure and reduced engine power.

ACTION:
Reposition or replace the charge air tube as required. Refer to the following Service Procedure for details.

SERVICE PROCEDURE

1. Check the charge air tubing from the turbocharger to the charge air cooler for clearance between the tubing and the generator and generator mounting fasteners.

2. If tubing shows signs of contacting any engine component, the charge air tubing and turbocharger compressor housing may need to be adjusted. First, check that the turbocharger compressor housing is properly indexed by measuring from the exhaust manifold to the cast boss in the compressor housing (Figure 1, View A). The measurement should be 4.88" ± 0.12" (124mm ± 3mm).


5 ✤
4
5
1
3 ✤
SEE VIEW A
VIEW A
ALIGN LOCATION MARK ON THE ADAPTER WITH THE TOOL PARTING LINE ON THE OUTBOARD SIDE OF THE COMPRESSOR HOUSING
1
3 ✤
2
4.88" (124mm)
EXHAUST MANIFOLD
ADJUST TURBO AT ASSEMBLY – LOOSEN TURBO CLAMP – RE-INDEX TURBO TO ACHIEVE 4.88" ± 0.12" (124 ± 3mm) CLEAR TO EXHAUST MANIFOLD – RE-TORQUE CLAMP TO 15-19 LB-FT (20-26 N·m)
COMPRESSOR PARTING LINE
TB-4166-A

✤ NOTE: CLAMPS MUST BE INSTALLED AS CLOSE TO PIPE BEADS AS POSSIBLE.

Item	Description
1	Adapter
2	Adapter O-Ring
3	Hot Side Tubing Clamp
4	Charge Air Tube
5	Spring-Loaded Clamp

Figure 1 - Article 95-17-12

3. If measurement is not within specification, loosen the clamp between the turbocharger center housing and the turbocharger compressor housing. Remove the hot side tubing clamp (Figure 1, Item 3) from the compressor housing and remove the adapter (Figure 1, Item 1).

4. Rotate the compressor housing until the boss on the housing is 4.88" ± 0.12" (124mm ± 3mm) from the exhaust manifold (Figure 1, View A). Torque the clamp to 15-19 lb-ft (20-26 N-m). Check the condition of the adapter O-ring (Figure 1, Item 2), replace if necessary (F1HZ-6C653-A). Reinstall the adapter, aligning the locator marks as shown in Figure 1. Torque the clamp to 85-115 lb-in (9.6-13 N-m).

OTHER APPLICABLE ARTICLES: NONE

WARRANTY STATUS: Eligible Under Basic Warranty Coverage

LABOR ALLOWANCE

DEALER CODING

OASIS CODES: 499000, 614000, 614500, 614600

95-17, ***Publication Date: AUGUST 28, 1995***

Generator - Motorcraft 95 Amp - Front Bearing Concern - FD1060/1460 Engines - Vehicles Built Before 7/3/95	**Article No. 95-17-13**

MEDIUM/HEAVY TRUCK:
1992-95 CARGO SERIES, F & B SERIES, L SERIES

ISSUE:
The front generator bearing may have early wear-out. This is due to the force of the main drive belt load.

ACTION:
Verify concern and install a revised Motorcraft 95 Amp Generator (F5PZ-10346-GA). The revised generator has a double wide front bearing which improves the handling of the force produced from the main drive belt load. Refer to the following Service Procedure for details.

SERVICE PROCEDURE

1. Verify the vehicle is the correct model and year and equipped with a Motorcraft 95 Amp Generator.
2. Remove the generator as outlined in the appropriate Service Manual, Section 14-02A.
3. Remove the regulator from the existing generator and install in the revised Motorcraft 95 Amp Generator (F5PZ-10346-GA).
4. Install new pulley (F5TZ-10344-AA) on the new Motorcraft 95 Amp Generator (F5PZ-10346-GA).

   NOTE:
   DO NOT USE OLD PULLEY ON NEW GENERATOR.

5. Install the new Motorcraft 95 Amp Generator (F5PZ-10346-GA) as outlined in the appropriate Service Manual, Section 14-02A.

OTHER APPLICABLE ARTICLES: NONE

WARRANTY STATUS: Eligible Under Basic Warranty Coverage

LABOR ALLOWANCE

DEALER CODING

OASIS CODES: 203100, 499000

95-17, ***Publication Date: AUGUST 28, 1995***

• **Engine - "Knocking" Noise - When Operating Engine At 2000-2300 RPM - FD1460 Engine** • **FD1460 Engine - "Knocking" Noise - When Operating Engine At 2000-2300 RPM** • **Noise - "Knocking" - FD1460 Engine - When Operating Engine At 2000-2300 RPM**	**Article No. 95-17-14**

MEDIUM/HEAVY TRUCK:
1993-95 F SERIES, L SERIES

ISSUE:
A "knocking" noise may be heard coming from the front of the engine when operating at 2000-2300 rpm with a light or no load condition on some vehicles. The noise is loudest when the engine is cold and will vary from engine to engine. This noise is due to normal acceleration and subsequent contact of the engine timing gears (torsional vibration).

ACTION:
If the "knocking" noise is objectionable to the customer, replace the current rubber vibration damper with a viscous damper. To provide clearance, the front engine support must be modified. Refer to the following procedure for service details.

NOTE:
DUE TO INTERFERENCE ISSUES, THIS TSB ARTICLE IS APPLICABLE FOR VEHICLES EQUIPPED WITH EATON VISCOUS FAN CLUTCHES AND F-SERIES VEHICLES EQUIPPED WITH 9.5" FRAME, TILT HOOD AND KYSOR AIR OPERATED FAN CLUTCHES.

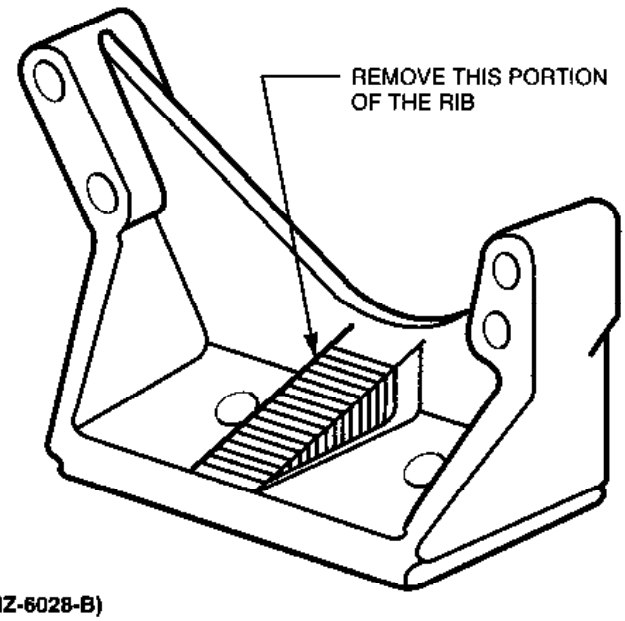
SERVICE PROCEDURE

1. Verify the engine knocking noise is as described in the ISSUE Section of this article.

2. Remove the main drive belt.

3. Remove the crankshaft pulley/adapter/damper. Refer to the appropriate model/year Service Manual, Section 03B-01.

4. Before the new viscous damper can be installed, the front engine support will have to be modified. This involves removing a portion of the front engine support center rib (Figure 1). This can be performed with the engine support on the vehicle.



FRONT ENGINE MOUNT (F3HZ-6028-B)

IF BRACKET IS ACCIDENTLY CUT BEYOND THE DIMENSIONS
SHOWN IN FIGURE 2, IT MUST BE REPLACED WITH A NEW REWORKED PART.

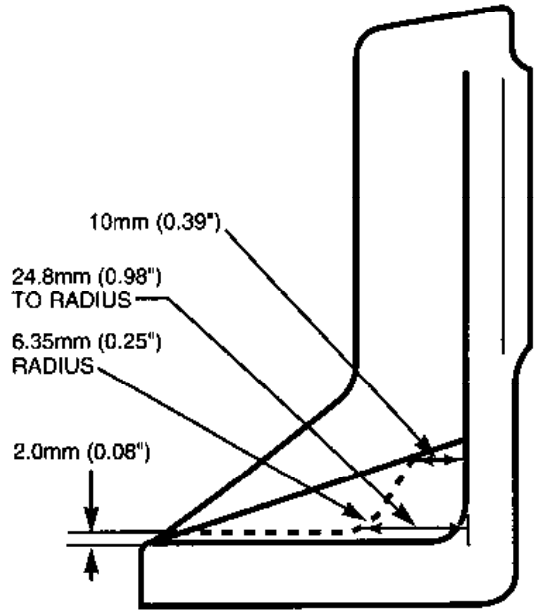
TB-4235-A

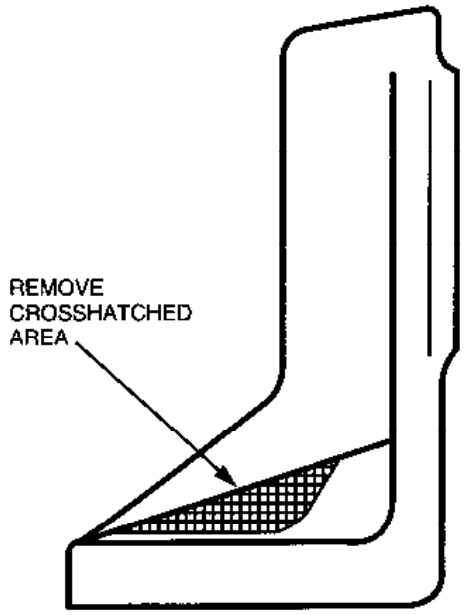
Figure 1 - Article 95-17-14

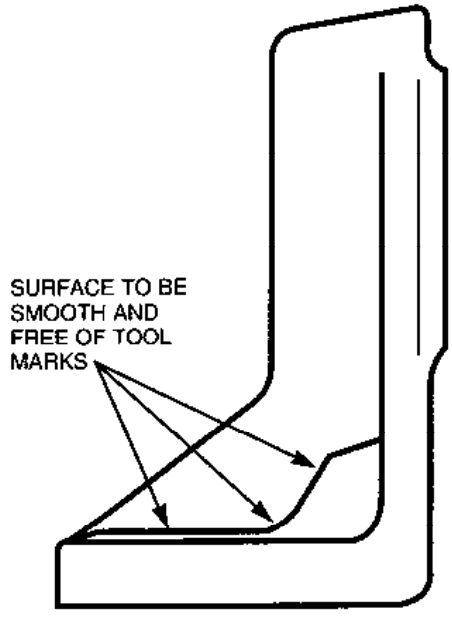
5. Mark the center rib of the front engine support to the dimensions shown in Figure 2.

CROSS-SECTION OF FRONT ENGINE SUPPORT

SCRIBE LINE IN CENTER WEB IN EACH LOCATION SHOWN. CONNECT AS SHOWN WITH THE DOTTED LINE.







TB-4236-A

Figure 2 - Article 95-17-14

6. Using a die grinder with an aluminum cutting bit, carefully remove the marked portion of the center rib material.

NOTE:
IF THE BRACKET IS CUT BEYOND THE DIMENSIONS SHOWN, IT MUST BE REPLACED WITH A NEW (REWORKED) BRACKET (F3HZ-6028-B).

7. When grinding is complete, the ground surface must be smoothed free of tool marks. Clean the area thoroughly.

8. Lubricate the threads of four (4) new 3914118-CF capscrews (Cummins #3914118) with 15W40 engine oil.

NOTE:
THE ORIGINAL DAMPER INCLUDED A PULLEY, VIBRATION DAMPER, AND ADAPTER AS A ONE-PIECE ASSEMBLY. THE REPLACEMENT PARTS ARE SEPARATE (PULLEY, DAMPER, AND ADAPTER).

9. Install the new crankshaft pulley (F4HZ-6312-A, Cummins #3926853), the new vibration damper (F4HZ-6316-A, Cummins #3914119), and the adapter (F4HZ-6N304-A, Cummins #3914121) using the new capscrews lubricated in Step 8. Using a Rotunda Engine Barring Tool (014-00264, or equivalent) to stop engine rotation, torque the damper capscrews to 200 N-m (148 lb-ft).

10. Install the fan drive belt as outlined in TSB 94-23-20.

NOTE:
FOR VEHICLES WHICH CAME FACTORY EQUIPPED WITH A CRANKSHAFT DRIVEN POWER TAKE-OFF (PTO), THE PTO ADAPTER (F3HT-6K025-BA) IS COMPATIBLE WITH, AND MAY BE REINSTALLED ONTO, THE NEW VIBRATION DAMPER ADAPTER (F4HZ-6N304-A).

OTHER APPLICABLE ARTICLES:

94-23-20

WARRANTY STATUS: Eligible Under Basic Warranty Coverage

LABOR ALLOWANCE

DEALER CODING

OASIS CODES: 497000

95-18, ***Publication Date: SEPTEMBER 11, 1995***

• **Air Conditioning - Discharge Line Fatique At A/C Compressor - R-12 Systems - FD1460 Engines** • **Air Conditioning - Lack Of Cooling - R-12 Systems - FD1460 Engines - Discharge Line Fatique At A/C Compressor**	**Article No. 95-18-11**

MEDIUM/HEAVY TRUCK:
1993-94 L SERIES

ISSUE:
The air conditioning (A/C) discharge line may fatique at the A/C compressor on some vehicles. This is due to vibration and the discharge line being unsupported near the A/C compressor.

ACTION:
Install new A/C discharge line. The new assembly has a support bracket brazed onto it. This support bracket will be secured to the existing A/C compressor mounting bolt. Refer to the following procedure for service details.

NOTE:
VEHICLES EQUIPPED WITH A KYSOR AIR OPERATED FAN CLUTCH HAVE A PRESSURE SENSOR INCLUDED IN THE DISCHARGE LINE. VEHICLES EQUIPPED WITH A VISCOUS FAN CLUTCH DO NOT REQUIRE A PRESSURE SENSOR IN THE LINE.

SERVICE PROCEDURE

1. Verify the vehicle is applicable and uses an R-12 system.

2. Discharge the system using Ford approved methods and a recovery station following the instructions in the appropriate Service Manual, Section 12-03 (if the system contains a charge).

3. Remove the bolts which attach the discharge line to the cooling module by referring to the appropriate Service Manual, Section 12-03A. For vehicles equipped with an air operated fan clutch, remove the wiring connector from the pressure sensor in the discharge line.

4. Disconnect the discharge line from the compressor. Disconnect the discharge line from the condenser, retain the -19E746- A/C lock for reuse on the spring lock coupling and discard discharge line.

5. Remove the top rear compressor mounting bolt and retain for reuse. Install the new discharge line to the compressor while aligning the support bracket with the top left compressor mounting hole. When the support bracket is aligned with the mounting hole, install the compressor mounting bolt. Torque bolt to 23 N-m (17 lb-ft).

6. Torque the discharge line tubing nut (to the A/C compressor) from 20-27 N-m (15-20 lb-ft). Route the discharge line into the clip points on the cooling module. Before tightening, install the discharge line into the condenser and reinstall the -19E746- A/C lock (removed in Step 4) on the spring lock coupling.

7. Using a new 5/16-18 Grade 5 hex P/T flanged nut (379930-S36, or equivalent) on the right rear side of the cooling module, re-clip the discharge line and torque nut from 16-23 N-m (12-17 lb-ft). On the left rear side, clip the discharge line (the bolt and U-spring clip may be reused). Torque from 16-23

N-m (12-17 lb-ft). On the left side of the module near the condenser, clip the discharge line and use the 1/4-20x0.5 bolt removed earlier. Torque bolt from 9.6-13 N-m (85-115 lb-in).

8. For vehicles equipped with an air operated fan clutch, install the pressure sensor connector into the pressure sensor located on the new discharge line assembly (the location of the sensor has changed from the old discharge line; use electrical tape to secure any excess wiring).

9. Evacuate and charge the A/C system as outlined in the appropriate Service Manual, Section 12-03.

OTHER APPLICABLE ARTICLES: NONE

WARRANTY STATUS: Eligible Under Basic Warranty Coverage

LABOR ALLOWANCE

DEALER CODING

OASIS CODES: 208000, 208200

Bulletin Contents

TSB Article 95-18-12 has been superseded by Article 96-13-15.

95-18, ***Publication Date: SEPTEMBER 11, 1995***

Cooling System - Overheats And/Or Drive Belts Come Off - Vehicles With Horton Fan Clutch	**Article No. 95-18-13**

MEDIUM/HEAVY TRUCK:
1993-95 L SERIES

ISSUE:
The engine may overheat and/or the drive belts may come off due to failure of the Horton fan clutch.

ACTION:
Replace the fan clutch with a revised fan clutch. The new fan clutch has a redesigned bearing to reduce the possibility of fan clutch failure. Refer to the following Service Procedure for details.

SERVICE PROCEDURE

1. Remove the bolts and washer which retain the fan blade to the fan clutch. Remove the fan blade and spacer (if equipped). Retain the fan blade, spacer and fasteners for reuse.

2. Remove the air line which connects to the clutch.

3. Loosen the clutch adjustment to relieve tension on the belt.

4. Remove the bolts and washers which retain the clutch to the engine. Remove the clutch and discard. Retain the fasteners for reuse.

5. Refer to the following Application Chart and install the proper clutch. Refer to the Standard Torque Specifications located in the beginning of the L-Series Service Manual for the correct installation torque. Set the belt tension listed in the appropriate L-Series Service Manual, Section 03C-05.

6. Reinstall the air line, fan blade and spacer (if equipped) removed above. Refer to the Standard Torque Specifications located in the beginning of the L-Series Service Manual for the correct installation torque.

OTHER APPLICABLE ARTICLES: NONE

WARRANTY STATUS: Eligible Under Basic Warranty Coverage

LABOR ALLOWANCE

DEALER CODING

OASIS CODES: 402000

95-18, ***Publication Date: SEPTEMBER 11, 1995***

Cooling Fan - Cracks On Fan Pulley Support Bracket - Vehicles Built Through 6/1/95 With Cummins N14 Engine	**Article No. 95-18-14**

MEDIUM/HEAVY TRUCK:
1988-95 L SERIES

ISSUE:
The fan pulley support bracket may crack along its base where it attaches to the engine. This may be due to stress after improper installation procedures.

ACTION:
If the fan pulley support bracket requires servicing due to cracking or if service to the engine is required that demands the bracket be removed, refer to the following Service Procedure for proper installation procedures.

SERVICE PROCEDURE

REMOVAL AND INSPECTION

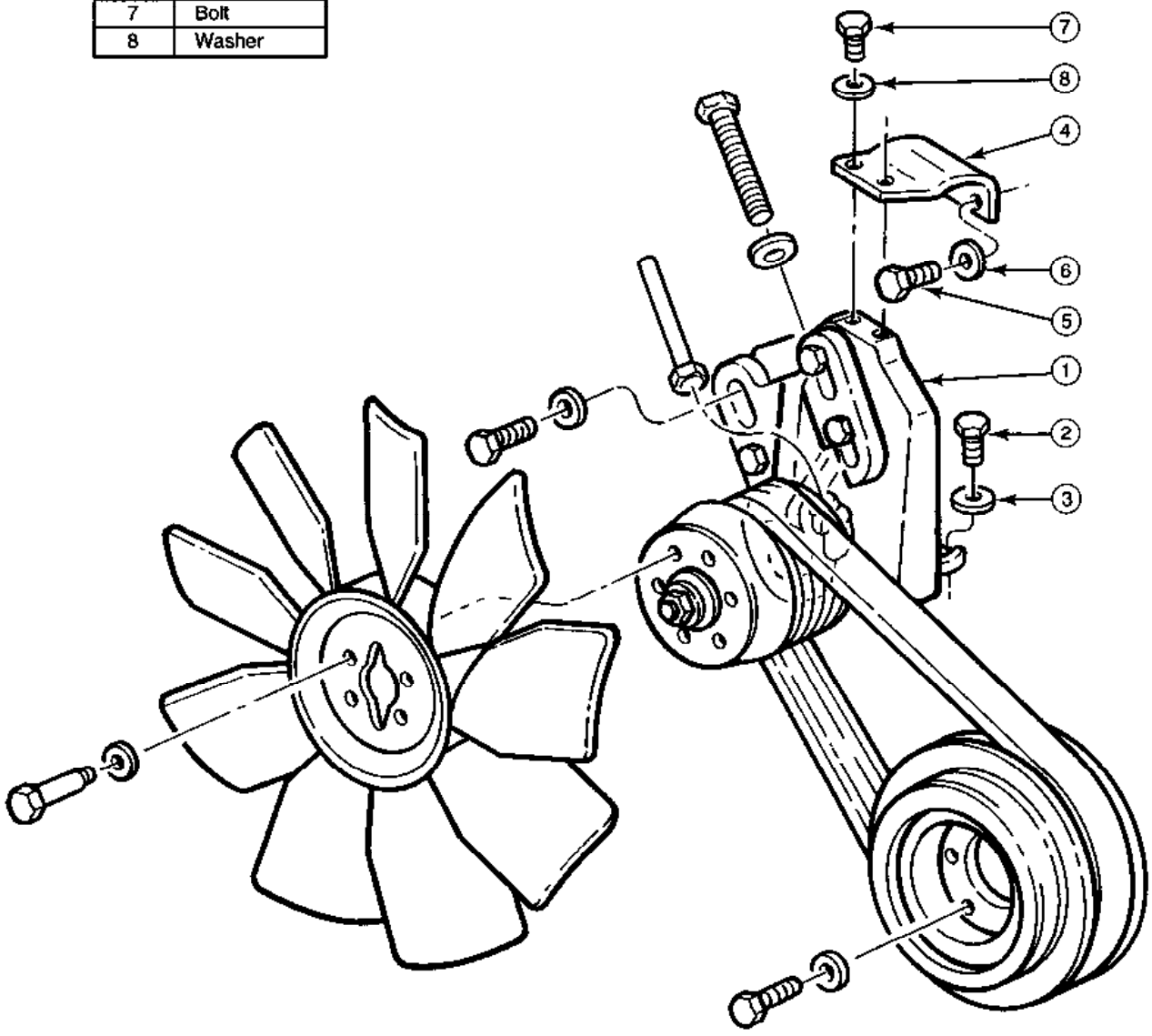
1. Refer to Section 03C-05 of the 1995 L-Series Powertrain/Drivetrain Service Manual to remove the fan belts, fan, fan clutch and supporting brackets.

2. Remove the bracket and inspect for cracks. The cracks will generally appear along the lower base of the bracket where it mounts to the engine. If cracks are found, the bracket must be replaced. If the bracket is free of cracks and otherwise serviceable, then reinstall it by referring to the Installation procedure that follows.

INSTALLATION

1. Install bracket (Figure 1, Item 1) onto the engine using two (2) bolts and washers (Figure 1, Items 2 and 3). Torque the bolts to 75-105 lb-ft (102-142 N-m).

Item	Description
1	Bracket
2	Bolt
3	Washer
4	Bracket
5	Bolt
6	Washer
7	Bolt
8	Washer



TB-4338-A

Figure 1 - Article 95-18-14

2. Install bracket (Figure 1, Item 4) onto the engine using two (2) bolts and washers (Figure 1, Items 5 and 6). Torque the bolts to 75-105 lb-ft (102-142 N-m).

3. Install the attaching bolts and washers (Figure 1, Items 7 and 8) between the two (2) brackets as shown. Torque to 75-105 lb-ft (102-142 N-m).

4. Install the remaining components by referring to the 1995 L-Series Powertrain/Drivetrain Service Manual, Section 03C-05.

OTHER APPLICABLE ARTICLES: NONE

WARRANTY STATUS: Eligible Under Basic Warranty Coverage

LABOR ALLOWANCE

DEALER CODING

OASIS CODES: 402000, 497000, 499000

95-19, ***Publication Date: SEPTEMBER 25, 1995***

Hood - Separation Between Headlamps And Grille	Article No. 95-19-16

MEDIUM/HEAVY TRUCK:
1985-95 L SERIES

ISSUE:
The hood may separate between the headlamps and grille on some vehicles operating in "severe duty" conditions. A revised design hood was placed in production on 8/2/95 to reduce the possibility of separation.

ACTION:
If vehicles exhibit this concern, install a replacement hood which has added reinforcement to reduce the possibility of separation. Refer to the following Service Procedure for details.

SERVICE PROCEDURE

1. Remove the hood; refer to the appropriate L-Series Service Manual, Section 01-02 for details.
2. Remove and install all items that are to be transferred to the new hood (i.e., headlamps, marker lamps, etc.).
3. Install the new hood as outlined in the Service Manual.
4. Prime and paint the new hood appropriately.

OTHER APPLICABLE ARTICLES: NONE

WARRANTY STATUS: Eligible Under Basic Warranty Coverage

LABOR ALLOWANCE

DEALER CODING

OASIS CODES: 111000

95-19, ***Publication Date: SEPTEMBER 25, 1995***

Wiring - Hood Wiring Harness - Availability Of Hood Wiring Harness Clip	Article No. 95-19-17

MEDIUM/HEAVY TRUCK:
1981-91 L SERIES

ISSUE:
An incorrect part supersession occurred, causing some customer dissatisfaction. The original part (DOHZ-14A099-C) was superseded with (F2HZ-14A099-A). These parts have a similar function but are not interchangeable.

ACTION:
The original part (DOHZ-14A099-C) is available for service and should be used when service to the hood wiring harness clip is required.

OTHER APPLICABLE ARTICLES: NONE

WARRANTY STATUS: INFORMATION ONLY

OASIS CODES: 203000

Bulletin Contents

TSB Article 95-19-18 has been superseded by Article 96-2-9.

95-20, ***Publication Date: OCTOBER 9, 1995***

Hard Starting Or No Starting - Extended Engine Shutdown Period - FD1060 And FD1460 Diesel Engines - Diesel Fuel Draining Back To Fuel Tank	Article No. 95-20-10

MEDIUM/HEAVY TRUCK:
1993-95 CARGO SERIES, F & B SERIES, L SERIES

ISSUE:
Hard starting or a no start concern may occur on some vehicles. This may be due to diesel fuel draining out of the fuel injection system back into the fuel tank. This condition causes the injection system to lose its prime which leads to longer starter engagement times for engine cranking, or a no start concern. This is most noticeable after an extended engine shutdown period.

ACTION:
Install a Diesel Fuel Check Valve (F5HZ-9285-AA) on the fuel return line at the rear of the engine. This valve will allow fuel to return during normal engine operation. Refer to the following Service Procedure for details.

SERVICE PROCEDURE

1. If equipped, remove the engine cover from inside the cab. Locate the fuel return line (Figure 1). For vehicles not equipped with a removable engine cover, the fuel return line must be accessed from under the vehicle.

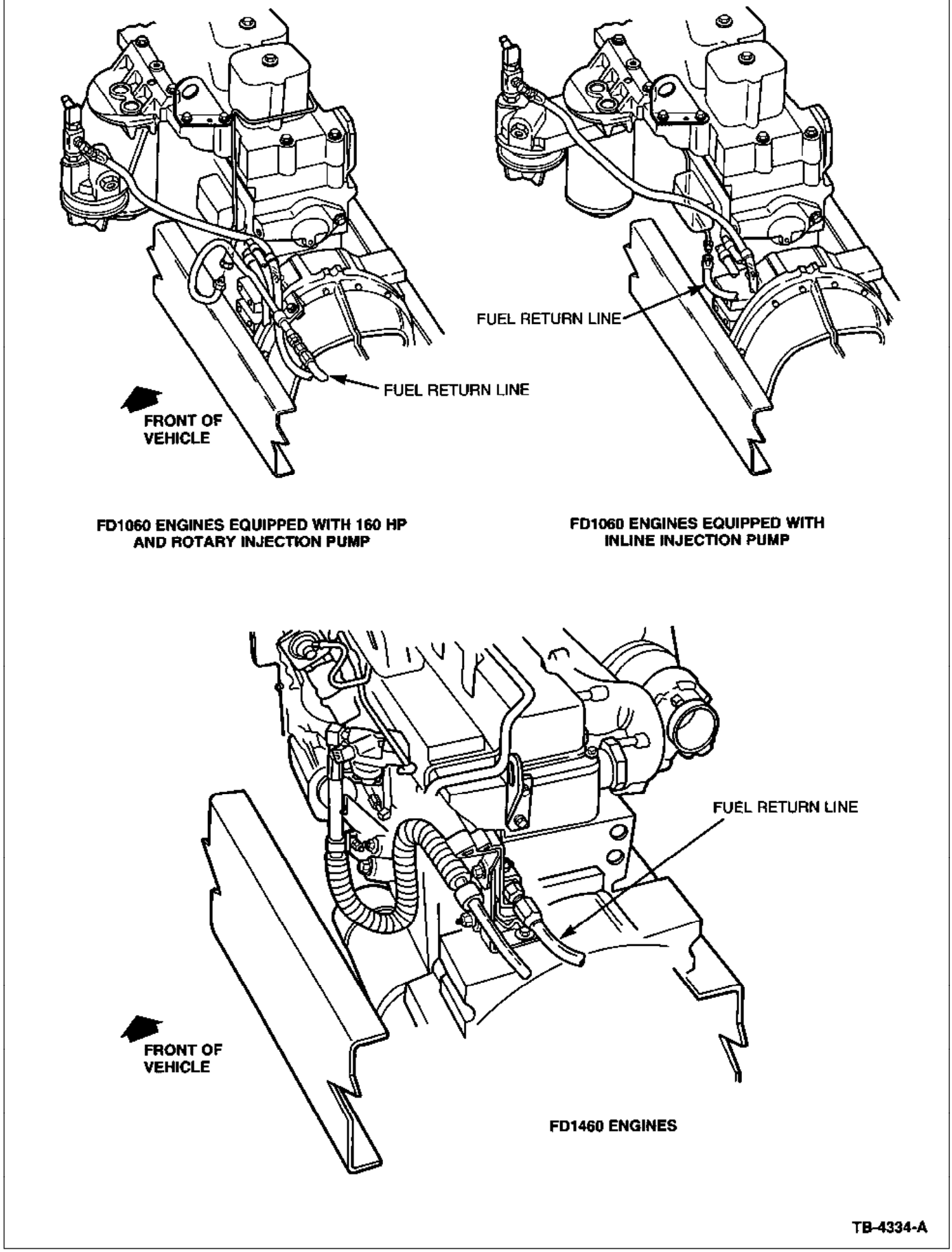


Figure 1 - Article 95-20-10

2. For the FD1060 or FD1460 engine, remove the fuel tank return line from the engine fuel return line. Use a suitable container to collect residual fuel which may be contained in the line.

3. Install the Fuel Check Valve (F5HZ-9285-AA) between the engine fuel return line and the fuel tank return line. Tighten both fittings.

4. Start engine and check for leaks. If equipped, reinstall the engine cover.

OTHER APPLICABLE ARTICLES: NONE

WARRANTY STATUS: Eligible Under Basic Warranty Coverage

LABOR ALLOWANCE

DEALER CODING

OASIS CODES: 602300, 603300

95-20, ***Publication Date: OCTOBER 9, 1995***

Air Conditioning - Compressor Rear Support Bracket Cracks - Vehicles With Cummins L10, M11 Or N14 Engine	**Article No. 95-20-11**

MEDIUM/HEAVY TRUCK:
1988-95 L SERIES

ISSUE:
The A/C compressor rear support bracket may crack on some vehicles.

ACTION:
If the original bracket is cracked, replace the bracket with a revised design bracket which will reduce the potential for cracking. Refer to the 1995 L-Series Body and Chassis Service Manual, Section 12-03A, for removal and installation procedures.

OTHER APPLICABLE ARTICLES: NONE

WARRANTY STATUS: Eligible Under Basic Warranty Coverage

LABOR ALLOWANCE

DEALER CODING

OASIS CODES: 208999

Gauge - Temperature - Inaccurate Readings - FD1060 Engine	Article No. 95-20-12

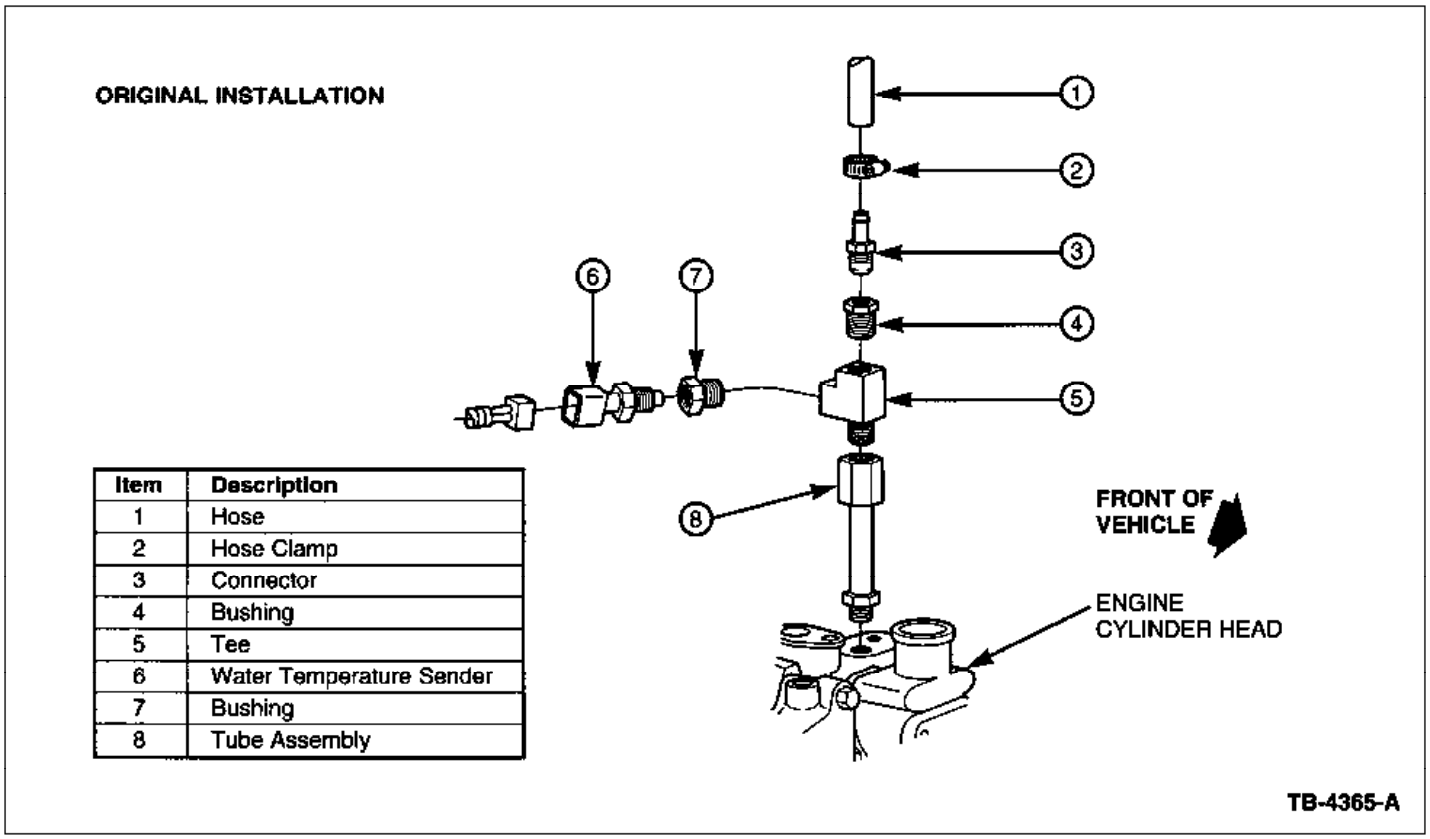
MEDIUM/HEAVY TRUCK:
1993-95 F & B SERIES, L SERIES

ISSUE:
The engine coolant temperature gauge may read on the cold side of the normal range, or may stay below normal even though the engine is at its proper operating temperature on some vehicles. This is caused by the coolant temperature sending unit not being positioned in the main stream of coolant flow. Instead, the sender is located in a pocket of coolant that is outside the normal coolant flow and cannot adequately indicate the coolant temperature.

ACTION:
Install a new temperature sender fitting. This will allow the sensor to be positioned in the main engine coolant flow and will provide a more representative temperature reading. Refer to the following Service Procedure for details.

SERVICE PROCEDURE

REMOVAL (Refer to Figure 1)



Item	Description
1	Hose
2	Hose Clamp
3	Connector
4	Bushing
5	Tee
6	Water Temperature Sender
7	Bushing
8	Tube Assembly

Figure 1 - Article 95-20-12

1. Partially drain the cooling system. Refer to the appropriate year F/B- or L-Series Powertrain/Drivetrain Service Manual, Section 03-03, for cooling system draining, filling and bleeding.

2. Electrically disconnect the water temperature sender.

3. Loosen the hose clamp and remove the hose from the connector.

4. Remove the connector from the bushing and retain.

5. Remove the bushing from the tee and retain.

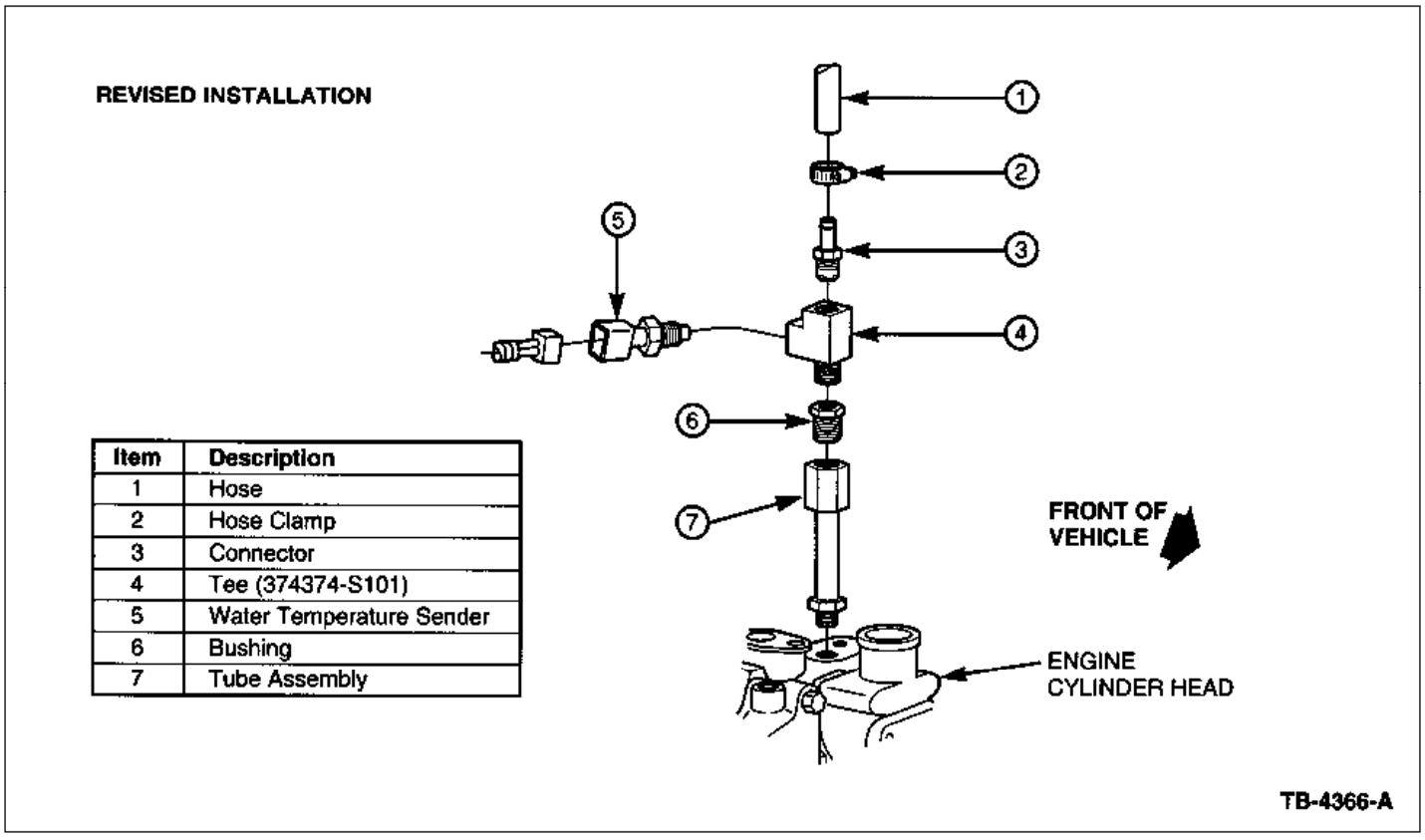
6. Remove the water temperature sender from the bushing and retain.

7. Remove the bushing from the tee and discard.

8. Remove the tee from the tube assembly and discard.

NOTE:
DURING REASSEMBLY, ALL THE THREADED FITTINGS SHOULD BE WRAPPED WITH A THREAD SEALING TAPE OR COATED WITH A THREAD SEALER TO PREVENT COOLANT LEAKS.

INSTALLATION (Refer to Figure 2)



Item	Description
1	Hose
2	Hose Clamp
3	Connector
4	Tee (374374-S101)
5	Water Temperature Sender
6	Bushing
7	Tube Assembly

Figure 2 - Article 95-20-12

1. Install the bushing into the tube assembly.

2. Install the new tee (374374-S101) into the bushing.

3. Install the water temperature sender into the side port of the new tee.
4. Install connector into the top port of the new tee.
5. Install the clamp and hose onto the connector and torque the clamp to 3.4-4.5 N-m (30-40 lb-in).
6. Install the electrical connector onto the water temperature sender.
7. Refill the cooling system following the procedure in the 1995 F/B- or L-Series Powertrain/Drivetrain Service Manual, Section 03-03.

OTHER APPLICABLE ARTICLES: NONE

WARRANTY STATUS: Eligible Under Basic Warranty Coverage

LABOR ALLOWANCE

DEALER CODING

OASIS CODES: 204000, 206000, 402000

Bulletin Contents

TSB Article 95-21-2 has been superseded by Article 98-5A-13.

95-21, ***Publication Date: OCTOBER 23, 1995***

Air Cleaner - Revised Air Cleaner Inlet Duct - Vehicles Equipped With Caterpillar 3306 Engine	**Article No. 95-21-10**

MEDIUM/HEAVY TRUCK:
1990-95 L SERIES

ISSUE:
The air cleaner air duct may come into contact with the hood. In rare situations, the air duct could rub a groove into the hood.

ACTION:
Replace the air duct with the revised air duct which will allow for added clearance between the hood and duct. The revised duct will reduce the possibility of the air duct rubbing on the hood. Refer to the appropriate year L-Series Service Manual, Section 03C-12 for details.

OTHER APPLICABLE ARTICLES: NONE

WARRANTY STATUS: Eligible Under Basic Warranty Coverage

LABOR ALLOWANCE

OASIS CODES: 499000

Bulletin Contents

TSB Article 95-22-7 has been superseded by Article 95-25-3.

95-23, ***Publication Date: NOVEMBER 20, 1995***

Paint - 1996 Color Chart - Aftermarket Supplier Cross-Reference List	**Article No. 95-23-1**

FORD:
1996 ASPIRE, CONTOUR, CROWN VICTORIA, ESCORT, MUSTANG, PROBE, TAURUS, THUNDERBIRD

LINCOLN-MERCURY:
1996 CONTINENTAL, COUGAR, GRAND MARQUIS, MARK VIII, MYSTIQUE, SABLE, TOWN CAR, TRACER

LIGHT TRUCK:
1996 AEROSTAR, BRONCO, ECONOLINE, EXPLORER, F SUPER DUTY, F-150-350 SERIES, RANGER, VILLAGER, WINDSTAR

MEDIUM/HEAVY TRUCK:
1996 CARGO SERIES, F & B SERIES, L SERIES

ISSUE:
The following 1996 Ford and Lincoln-Mercury color charts (Figures 1 through 4) provide all of the supplier paint code numbers for the Ford two-digit paint codes listed on the Vehicle Certification Label.

1996 FORD CAR AND LIGHT TRUCK PAINT CODES

"M" No.	Color Name	CO or New	Color Code	PPG	DuPont	Akzo Sikkens	Martin-Senour Acme Sherwin-Williams	BASF R-M	Glasurit	ICI Autocolor	Spies Hecker	Standox
1724	Black	CO	YC	9300	99C	FA90:YC	01738	1724 PKG	21-1240 PKG	WN22	70927	YC
5920	Oxford White Solid	CO	YO	3600	B8424	FA90:YO	33631	14110	FDU-5920	KF35	11666	YO
6210	Colonial White Solid	CO	YY	3876	B8687	FA90:YY	35521	16185	FDU-6210	MK35	17705	YY
6346	Vermilion Solid	CO	EP	4163	B8902	FA90:EP	39068	19060	FDU-6346	WM56	38859	EP
6373	Ebony Solid C/C ▲	CO	UA	9700	F0207	FA90:UA	38743	18183	FDU-6373	TD23B	78287	UA
6406	Glacier White Solid	CO	ZC	90677	B8951	FA90:ZC	41116	20083	FDU-6406	XG12	16360	ZC
6414	Deep Jewel Green C/C ▲	CO	PA	4215	B9025	FA90:PA	41970	20082	FDU-6414	C592B	98300	PA
6415	Crystal Blue Frost C/C ▲	CO	MD	4214	B9026	FA90:MD	41968	20070	FDU-6415	C558B	98259	MD
6425	Elec. Currant Red C/C ▲	CO	EG	4213	B9031	FA90:EG	41967	20078	FDU-6425	PF79B	98255	EG
6464	Aquamarine Frost C/C ▲	CO	PN	4507	B9102	FA92:PN	45872	21143	FDU-6464	1AD3B	99834	PN
6465	Mocha Frost C/C ▲	CO	DD	4282	B9101	FA91:DD	44092	21146	FDU-6465	PH68B	99152	DD
6479	Royal Blue Metallic C/C ▲	N	KM	4830	B9431	FA93:KM	48448	24045	FDU-6479	5PS4B	50730	KM
6485	Bimini Blue C/C ▲	CO	K3	4440	B9204	FA92:K3	45755	22001	FDU-6485	1AC8B	99751	K3
6487	Cayman C/C ▲	CO	DA	4483	B9169	FA92:DA	45687	22000	FDU-6487	1AD5B	99753	DA
6496	Vermilion Red T/C	N	E8	4760/ 4761	B9402	FA93:E8	48439	24038	FDU-6496	FPM3B	30464	E8
6501	Medium Opal Met. C/C ▲	CO	WC	4471	B9202	FA92:WC	45809	22007	FDU-6501	1AD1B	99747	WC
6504	Med. Royal Blue Met. C/C ▲	CO	LA	4473	B9207	FA92:LA	45908	22015	FDU-6504	1AD6B	99749	LA
6505	Silver Metallic C/C ▲	CO	YN	4282	D8806	FA90:YN	43638	21169	FDU-6505	5AF6B	70624	YN
6520	Medium Mocha Metallic	CO	DJ	4505	B9227	FA92:DJ	45854	22016	FDU-6520	2NR4B	93635	DJ
6547	Performance White Solid	CO	WB	4646	B9344	FA93:WB	47462	23072	FDU-6547	2PA5B	16912	WB
6551	Ultra Red Solid	N	WA	4839	B9449	FA94:WA	48458	24055	FDU-6551	5RF9B	30462	WA
6562	Medium Lapis Metallic	CO	KG	4651	B9353	FA93:KG	46993	23127	FDU-6562	2RA7B	50732	KG
6563	Lapis Metallic C/C ▲	CO	KE	4506	B9236	FA92:KE	46009	22009	FDU-6563	2NR3B	99750	KE
6572	Dark Tourmaline C/C ▲	CO	NA	4503	B9239	FA92:NA	46010	22010	FDU-6572	1AX1B	99835	NA
6585	Reef Blue Metallic	CO	PC	4428	B9162	FA92:PC	45360	22019	FDU-6585	1AM8B	93640	PC
6597	Light Smoke Metallic	CO	MC	4494	B9171	FA91:MC	45708	21661	FDU-6597	IAE7B	93634	MC
6598	Smoke Metallic	CO	MS	4495	B9172	FA91:MS	45710	21662	FDU-6598	D415B	93633	MS
6599	Brt. Calypso Green C/C ▲	CO	PM	4504	B9173	FA92:PM	45764	22002	FDU-6599	1AX4B	99836	PM
6600	Med. Calypso Green C/C ▲	N	PL	4831	B9432	FA94:PL	48449	24046	FDU-6600	5RF8B	60482	PL
6612	Pumice Metallic C/C ▲	N	DK	4822	B9433	FA94:DK	48438	24037	FDU-6612	5RE9B	70654	DK
6615	Ultra White Solid	N	ZF	4762	B9403	FA94:ZF	48455	24052	FDU-6615	FPE8B	10658	ZF
6616	Indigo Blue Metallic C/C ▲	N	KK	4829	B9435	FA94:KK	48447	24044	FDU-6616	5PE9B	50729	KK
6618	Dark Portofino C/C ▲	N	XB	4834	B9436	FA94:XB	48453	24049	FDU-6618	5RE6B	50726	XB
6620	Light Santa Fe C/C ▲	N	XD	4836	B9437	FA94:XD	48454	24051	FDU-6620	5RE7B	80149	XD
6623	Portofino Blue C/C ▲	CO	XC	4835	B9438	FA94:XC	48489	24050	FDU-6623	5PF1B	50721	XC
6626	Desert Coral C/C ▲	CO	FD	4824	B9439	FA94:FD	48442	24039	FDU-6626	5PH7B	30461	FD
6628	Electric Currant Red T/C	CO	GF	4826/ 4862	B9474/ B9440	FA94:GF	48444	24057	FDU-6628	5PE7B	30460	GF
6630	Teal C/C ▲	CO	RD	4739	B9401	FA93:RD	47629	23123	FDU-6630	5EM8B	50509	RD
6631	Light Opal C/C ▲	CO	WM	4837	B9450	FA94:WM	48459	24056	FDU-6631	5PF2B	70652	WM
6632	Light Evergreen Frost	CO	FA	4823	B9441	FA94:FA	48441	24041	FDU-6632	5P57B	60479	FA
6635	Iris C/C ▲	CO	GC	4640	B9265	FA92:GC	46747	22008	FDU-6635	2RA5B	91497	GC
6636	Sunrise Red Met. C/C ▲	CO	FC	4737	B9354	FA93:FC	47628	23068	FDU-6636	5WT7B	30343	FC
6637	Med. Palomino Met. C/C ▲	CO	CB	4821	B9442	FA94:CB	48437	24036	FDU-6637	5RC4B	30459	CB
6638	Medium Teal Met. C/C ▲	CO	RG	4832	B9443	FA94:RG	48450	24047	FDU-6638	5PS6B	60478	RG
6640	Performance White C/C ▲	CO	WB	4833	B9344	FA93:WT	48488	24048	FDU-6640	5PG1B	10657	WB
6641	Evergreen Frost C/C ▲	CO	FE	4825	B9445	FA94:FE	48443	24040	FDU-6641	5PH8B	60477	FE
6653	Red Nightmist C/C ▲	CO	GK	4828	B9446	FA94:GK	48446	24043	FDU-6653	5XJ5B	40158	GK
6669	Performance White ▲▲	CO	WR	4840/ 4881	B9447/ B9448	FA94:WR	48451B/ 48452M	24053	FDU-6669	PE4B/ 5PE5G	10656	WR
6675	Chrome Yellow C/C ▲	CO	BZ	4736	B9355	FA93:BZ	47486	23095	FDU-6675	FPS8B	10496	BZ
6681	Dark Lapis Metallic C/C ▲	CO	KN	4738	B9348	FA93:KN	46990	23086	FDU-6681	2NP7B	50499	KN

▲ Basecoat/Clearcoat ▲▲ Tri Coat T/C Tinted Clearcoat

TB-4199-B

Figure 1 - Article 95-23-1

1996 FORD CAR AND LIGHT TRUCK PAINT CODES

"M" No.	Color Name	CO or New	Color Code	PPG	DuPont	Akzo Sikkens	Martin-Senour Acme Sherwin-Williams	BASF R-M	Glasurit	ICI Autocolor	Spies Hecker	Standox
6688	Laser Red Tint T/C	CO	E9	4845/ 4846	B9407/ B9408	FA94:E9	49761/ 49762	24035	FDU-6688	5WT4B	30458	E9
6689	Bronze Night Mist C/C ▲	CO	DP	4766	B9360	FA93:DP	47974	23067	FDU-6689	5WT9B	20232	DP
6697A	Midnight Red Met. C/C ▲	N	EN	4983	B9471	FA95:EN	50225	25082	FDU-6697	6KG2B	30718	EN
6700A	Graphite Night Mist C/C ▲	N	ZU	4988	B9506	FA95:ZU	50313	25083	FDU-6700	6YR4B	72231	ZU
6703	Venetian Blue Met. C/C ▲	CO	TA	4838	B9451	FA94:TA	48510	25077	FDU-6703	6TT3B	53723	TA
6704A	Bright Sapphire Met. C/C ▲	N	JA	4982	B9507	FA95:JA	50308	25081	FDU-6704	6WX9B	40350	JA
6705A	Berry C/C ▲	N	FJ	4978	B9508	FA95:FJ	50304	25078	FDU-6705	6WX8B	31043	FJ
6706A	Dark Berry C/C ▲	N	FF	4990	B9558	FA95:FF	50315	25084	FDU-6706	6WX7B	31052	FF
6707A	Medium Berry Met. C/C ▲	N	FG	4977	B9509	FA95:FG	50303	25073	FDU-6707	6WX6B	31040	FG
6708A	Light Willow Met. C/C ▲	N	SL	4985	B9510	FA95:SL	50310	25074	FDU-6708	6WX5B	61085	SL
6709A	Deep Iris Metallic C/C ▲	N	GP	4860	B9472	FA94:GP	48959	24060	FDU-6709	6FW3B	40207	GP
6712A	Medium Graphite C/C ▲	N	TR	4986	B9511	FA95:TR	50311	25079	FDU-6712	6WY3B	72232	TR
6714A	Pumice Solid	N	DQ	4989	B9534	FA95:DQ	50314	25085	FDU-6714	6WY1B	72234	DQ
6715A	Medium Willow Met. C/C ▲	N	SH	4984	B9512	FA95:SH	50309	25075	FDU-6715	6WY5B	61084	SH
6717A	Ultra Violet Metallic C/C ▲	N	GN	4979	B9513	FA95:GN	50305	25087	FDU-6717	6WY4B	40349	GN
6718A	Ivory 3C ▲▲	N	HA	4980/ 4981	B9514/ B9515	FA95:HA	50306/ 50307	25080	FDU-6718	7AJ5B/ 7AJ6B	20431	HA
6720A	Silver Frost C/C ▲	N	TS	4987	B9473	FA95:TS	50312	25076	FDU-6720	6WY2B	72233	TS
6735	Colonial White C/C ▲	N	ZM	4944	B9535	FA95:ZM	50492	20588	FDU-6735	6WE5B	11361	ZM
6750	Cypress Gold Frost C/C ▲	N	BF	5093	B9656	FA96:BF	51229	26145	FDU-6750	7VC3B	20646	BF
6752	Dark Cypress Gold C/C ▲	N	BB	5092	B9603	FA96:BB	51228	26146	FDU-6752	7VC4B	20653	BB
6753	Bright Tangerine C/C ▲	N	CM	5094	B9608	FA96:CM	50493	25089	FDU-6753	7VW7B	20645	CM
6754	Light Saddle C/C ▲	N	DZ	5095	B9661	FA96:DZ	51230	26147	FDU-6754	7VC5B	80460	DZ
6756	Cordovan C/C ▲	N	FZ	5008	B9662	FA95:FZ	50627	25096	FDU-6756	7VE8B	32671	FZ
6757	Toreador Red Tint C/C ▲	N	JB	5098/ 5099	B9663/ B9696	FA96:JB	51232/ 49762	26149	FDU-6757	7AP2B	33066	JB
6758	Toreador Red C/C ▲	N	FL	5096	B9660	FA95:FL	51231	26148	FDU-6758	7VE9B	33056	FL
6759	Desert Violet C/C ▲	N	JC	5100	B9664	FA96:JC	51234	26150	FDU-6759	—	40523	JC
6761	Thistle C/C ▲	N	JS	5101	B9605	FA96:JS	51236	26152	FDU-6761	7VV9B	40522	JS
6762	Dark Baltic C/C ▲	N	JT	5102	B9666	FA96:JT	51237	26153	FDU-6762	7VW1B	54293	JT
6763	Med. Wedgewood C/C ▲	N	LD	5103	B9667	FA96:LD	51238	26154	FDU-6763	7VW2B	54294	LD
6764	Pacific Green C/C ▲	N	PS	5105	B9607	FA96:PS	51239	26155	FDU-6764	7VW6B	61850	PS
6766	Willow Frost C/C ▲	N	SD	5106	B9602	FA96:SD	51240	26156	FDU-6766	7VW3B	72902	SD
6767	Alpine Green C/C ▲	N	SR	5107	B9606	FA96:SR	51241	26157	FDU-6767	7VW4B	61832	SR
6771	Dark Toreador C/C ▲	N	UF	5115	B9668	FA96:UF	51242	26158	FDU-6771	7VW5B	33055	UF
6774	Ultra White C/C ▲	N	ZR	5061	B9551	FA95:ZR	50875	25097	FDU-6774	7VT2B	12095	ZR
6796	Light Opal C/C ▲	N	WO	5117	B9671	FA96:WO	51812	26176	FDU-6796	9GH5B	72903	WO
6797	Dark Tourmaline C/C ▲	N	NB	5113	B9672	FA96:NB	51814	26174	FDU-6797	9GH6B	61834	NB
6799	Royal Blue Metallic C/C ▲	N	LE	5112	B9669	FA96:LE	51813	26173	FDU-6799	9GM7B	54296	LE
6800	Toreador Red Met. C/C ▲	N	FN	5118	B9681	FA96:FN	51815	26172	FDU-6800	9GL6B	33054	FN
6801	Med. Calypso Met. C/C ▲	N	PT	5120	B9682	FA96:PT	51816	26175	FDU-6801	9GL9B	61833	PT
6802	Indigo Blue Metallic C/C ▲	N	KU	5110	B9670	FA96:KU	51817	26177	FDU-6802	9GH9B	54295	KU
6803	Light Saddle Met. C/C ▲	N	DY	5119	B9683	FA96:DY	51818	26171	FDU-6803	9GM3B	20644	DY
6804	Ivory Solid C/C ▲	N	HB	5097	B9675	FA96:HB	51819	26161	FDU-6804	9GL1B	15160	HB
6806	Mystic C/C ▲	N	LF	—	—	—	—	26160	FDU-6806	—	—	—
6828	Light Opal Metallic	N	WE	5116	B9679	FA96:WE	52146	26170	FDU-6828	9GL5B	72986	WE
6829	Indigo Metallic	N	KT	5109	B9678	FA96:KT	52143	26162	FDU-6829	9GL3B	54362	KT
6831	Dark Tourmaline Metallic	N	ND	5114	B9680	FA96:ND	52145	26164	FDU-6831	9GH7B	61906	ND
6833	Royal Blue Metallic	N	LC	5111	B9677	FA96:LC	52144	26163	FDU-6833	9GH8B	54356	LC

▲ Basecoat/Clearcoat ▲▲ Tri Coat T/C Tinted Clearcoat

TB-4200-B

Figure 2 - Article 95-23-1

1996 FORD MEDIUM AND HEAVY TRUCK PAINT CODES

"M" No.	Color Name	CO or New	Color Code	PPG	DuPont	Akzo Sikkens	Martin-Senour Acme Sherwin-Williams	BASF R-M	Glasurit	ICI Autocolor	Spies Hecker	Standox
1724A	Black	CO	YC	9300	F0208	FA90:YC	01738	PKG	PKG	WN22	70927	YC
1525A	Special White	CO	BW	8321	4954	FA91:BW	02260	2347	FDU-1525	FC78	17688	BW
5004A	Bahama Blue	CO	MR	2281	S240	FA90:MR	03091	2374	FDU-5004	HV39	53466	MR
5466A	Orange	CO	CC	2915	44746	FA90:CC	03762	8722	FDU-5466	WV22	50353	CC
5681A	Candy Apple Red	CO	EU	3279	L8053	FA90:EU	30538	11443	FDU-5681	HA39	39920	EU
5858A	Medium Walnut Metallic	CO	AZ	25150	B9228	FA93:AZ	32844	13235	FDU-5858	7344M	93230	AZ
6261A	Dark Chestnut C/C ▲	CO	A8	078	B8857	FA91:A8	38163	18148	FDU-6261	PC39B	97262	A8
6262A	Dark Chestnut Metallic	CO	CE	4080	B8856	FA90:CE	38162	18146	FDU-6262	8189N	97261	CE
6284A	School Bus Yellow	CO	BY	82807	B8779	FA91:BY	36889	18644	FDU-6284	WA30	16913	BY
6325A	Currant Red Solid	CO	EC	4161	B8903	FA90:EC	39067	19051	FDU-6325	WM55	38858	EC
6347A	Diamond White Solid	CO	ZA	90631	B8917	FA90:ZA	35872	19073	FDU-6347	WM60	14986	ZA
6373A	Ebony Solid C/C ▲	CO	UA	9700	F0207	FA90:UA	38743	18183	FDU-6373	TD23B	78287	UA
6403A	Pawnee Tan Solid	CO	AV	4220	B9034	FA90:AV	42575	20085	FDU-6403	XD5B	16373	AV
6415A	Crystal Blue Frost C/C ▲	CO	MD	4214	B9026	FA90:MD	41968	20070	FDU-6415	CS54B	98259	MD
6425A	Electric Currant Red C/C ▲	CO	EG	4213	B9031	FA90:EG	41967	20078	FDU-6425	PF79B	98255	EG
6470A	Vermilion Solid C/C ▲	CO	E4	4217	B8954	FA90:E4	42497	19079	FDU-6470	T578B	38004	E4
6479A	Royal Blue C/C ▲	N	KM	4830	B9431	FA93:KM	48448	24045	FDU-6479	5PS4B	50730	KM
6486A	Medium Aubergine C/C ▲	CO	GA	4472	B9205	FA92:GA	45807	22005	FDU-6486	1AD4B	99752	GA
6487A	Cayman C/C ▲	N	DA	4438	B9169	FA92:DA	45587	22000	FDU-6487	1AD5B	99753	DA
6501A	Medium Opal C/C ▲	CO	WC	4471	B9202	FA92:WC	45809	22007	FDU-6501	1AD1B	99747	WC
6505A	Silver C/C ▲	CO	YN	4262	D8806	FA90:YN	43638	21169	FDU-6505	5AFBB	70624	YN
6554A	Medium Opal Metallic	CO	WD	4653	B9351	FA93:WD	46950	23063	FDU-6554	6TB2B	72757	WD
6556A	Dark Lapis Metallic	CO	KH	4652	B9352	FA93:KH	46992	23065	FDU-6556	5RG1B	91502	KH
6562A	Medium Lapis Metallic	CO	KG	4651	B9353	FA93:KG	46993	23127	FDU-6562	2RA7B	50732	KG
6563A	Lapis C/C ▲	CO	KE	4506	B9236	FA92:KE	46009	22009	FDU-6563	2NR3B	99750	KE
6564A	Performance Red Solid	CO	EY	4614	B9262	FA92:EY	46496	22006	FDU-6564	1AW7B	37237	EY
6585A	Reef Blue Metallic	N	PC	4428	B9162	FA92:PC	45360	22019	FDU-6585	1AM8B	93640	PC
6597A	Light Smoke Metallic	CO	MC	4494	B9171	FA91:MC	45708	21661	FDU-6597	1A67B	93634	MC
6635A	Iris C/C ▲	CO	GC	4640	B9265	FA92:GC	46747	22008	FDU-6635	2RA5B	91497	GC
6694A	Light Sonora C/C ▲	CO	DM	27517	B9356	FA93:DM	47724	23125	FDU-6694	6AT8B	80414	DM
6695A	Medium Sonora C/C ▲	CO	DN	27518	B9357	FA93:DN	47723	23126	FDU-6695	6TA9B	80415	DN
6696A	Nimbus C/C ▲	CO	ZJ	35589	B9358	FA93:ZJ	47752	23067	FDU-6684	6TB1B	70483	ZJ

▲ Basecoat/Clearcoat

TB-4201-B

Figure 3 - Article 95-23-1

1996 ASPIRE PAINT CODES

Color Name	CO or New	Color Code	PPG	DuPont	Akzo Sikkens	Martin-Senour Acme Sherwin-Williams	BASF R-M	Glasurit	ICI Autocolor	Spies Hecker	Standox
Crystal White	CO	YD	91196	N9939	FA94:YD	48991	24216	FDU-YD	5MW3B	10715	YD
Laguna Blue C/C ▲	CO	MB	18777	N9941	FA94:MB	48990	24215	FDU-MB	5WL8B	50833	MB
Silver C/C ▲	CO	ZP	—	F0839	FA95:ZP	50662	25200	FDU-C2	TTW5B	72439	ZP
Hot Red Solid	CO	E5	73249	F1846	FA96:E5	42712	20387	FDU-501	2LC8B	38987	E5
Red Metallic ▲	N	FR	74663	N9942	FA96:FR	52725	26221	FDU-FR	AVK1B	33130	FR
Pacific Green ▲	N	P8	47986	F1844	FA96:P8	52723	26222	FDU-P8	AVK3B	61921	P8
Beige Metallic ▲	N	A3	28357	F1845	FA96:A3	52724	26220	FDU-A3	AVK2B	20666	A3

1996 PROBE PAINT CODES

Color Name	CO or New	Color Code	PPG	DuPont	Akzo Sikkens	Martin-Senour Acme Sherwin-Williams	BASF R-M	Glasurit	ICI Autocolor	Spies Hecker	Standox
Vibrant White	CO	WP	4541	B9311	FA93:WP	46986	23103	FDU-PWP	4YR3B	10361	WP
Ebony C/C ▲	CO	UB	9700	B9464	FA94:UB	48951	24065	FDU-PUB	5YP7B	78287	UB
Laser Red T/C ▲	CO	HL	5015/ 5016	B9563/ B9576	FA95:HL	50712/ 49762	25091	FDU-PHL	7XH1B	32716	HL
Chameleon Blue C/C ▲	CO	KS	5018	B9564	FA95:KS	50714	25092	FDU-PKS	7HW9B	53786	KS
Seafoam C/C ▲	N	NK	5017	B9565	FA95:NK	50715	25093	FDU-PNK	7XH2B	61434	NK
Rio Red T/C	CO	EZ	—	B9166	FA91:EZ	46431	21695	FDU-PEZ	4ST3B	37225	EZ
Teal Mist	CO	SK	4848	B9361	FA94:SK	48949	24067	FDU-PSK	5VY5B	60555	SK
Medium Alpine Green Metallic	N	SF	4685	F1842	FA96:SF	52731	26178	FDU-PSF	AVX5B	61922	SF
Grey Green Metallic ▲	N	CU	5175	F1843	FA96:CU	52722	26168	FDU-PCU	AVX6B	72997	CU
Boysenberry Blue Metallic ▲	N	JJ	5121	B9695	FA96:JJ	52313	26169	FDU-PJJ	AAB5B	40531	JJ

▲ Basecoat/Clearcoat ▲▲ Tri Coat T/C Tinted Clearcoat

TB-4418-A

Figure 4 - Article 95-23-1

ACTION:
Paint should be available in either enamel or urethane from the manufacturers. To get the color match, use of either "Factory Pack" or "Intermix" is acceptable.

OTHER APPLICABLE ARTICLES:

92-20-1

93-24-4

SUPERSEDES: 95-7-2

WARRANTY STATUS: INFORMATION ONLY

OASIS CODES: 106000

95-23, ***Publication Date: NOVEMBER 20, 1995***

• **Engine - Excessive Vibration At Low Engine RPM** • **Vibration - Engine - Excessive Vibration/Noise At Low Engine RPM**	**Article No. 95-23-15**

MEDIUM/HEAVY TRUCK:
1992-93 CARGO SERIES, F & B SERIES, L SERIES

This TSB is being republished in its entirety to include a NOTE after Step 8 and to include Step 10.

ISSUE:
The subject vehicles may exhibit excessive engine noise/vibration/ harshness at low engine rpm. This may be caused by the engine mounts.

ACTION:
Install improved engine mounts, now available as a service kit. Refer to the following procedure and to the Instruction Sheet included in each kit for service details.

SERVICE PROCEDURE

1. Remove the front mount bolts and threaded spacer and discard.

2. Jack up the engine enough to remove the existing insulators and spacer plates (if provided) and discard.

3. Position the new spacers and isolators in place as described on the appropriate sketch. Refer to Figures 1, 2 and 3.

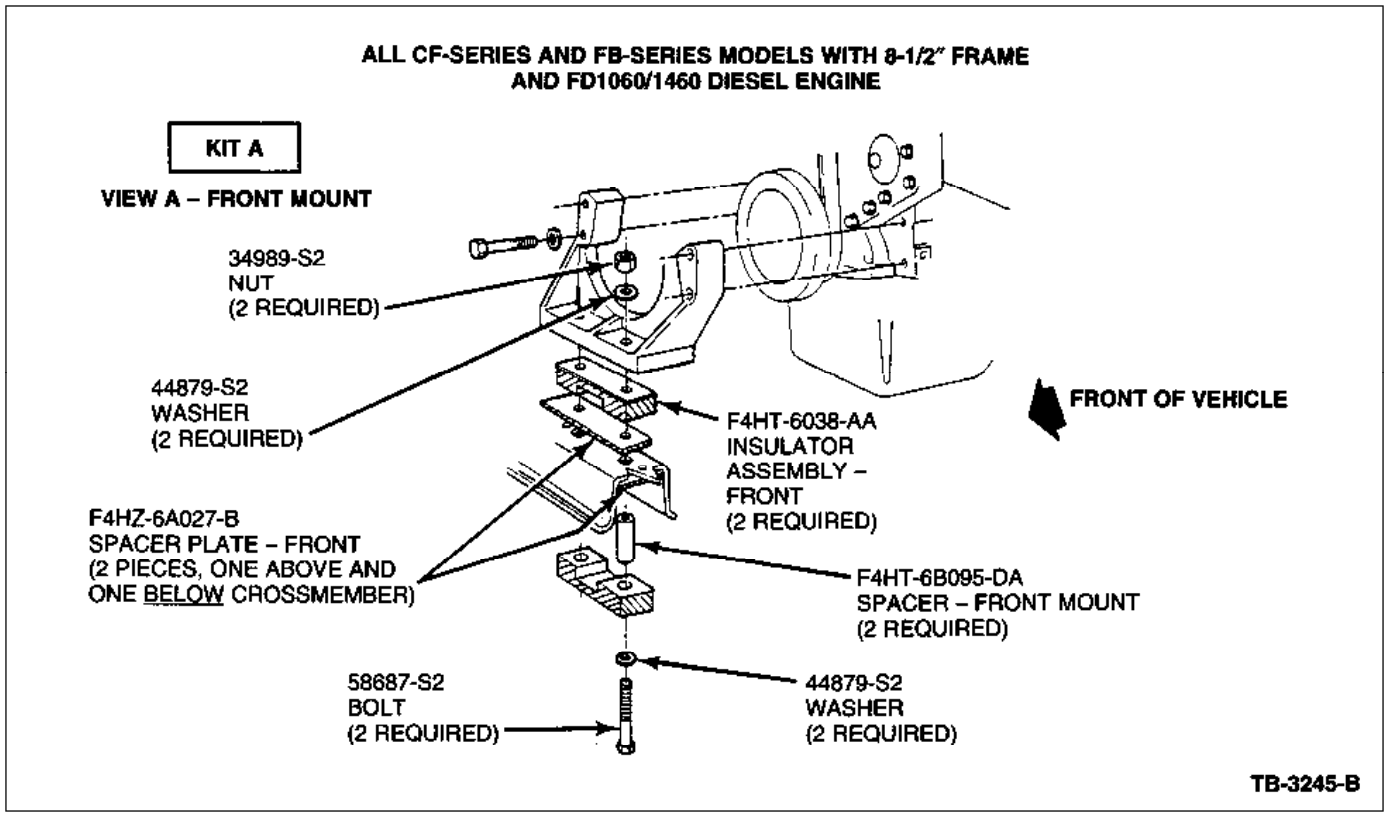


Figure 1 - Article 95-23-15

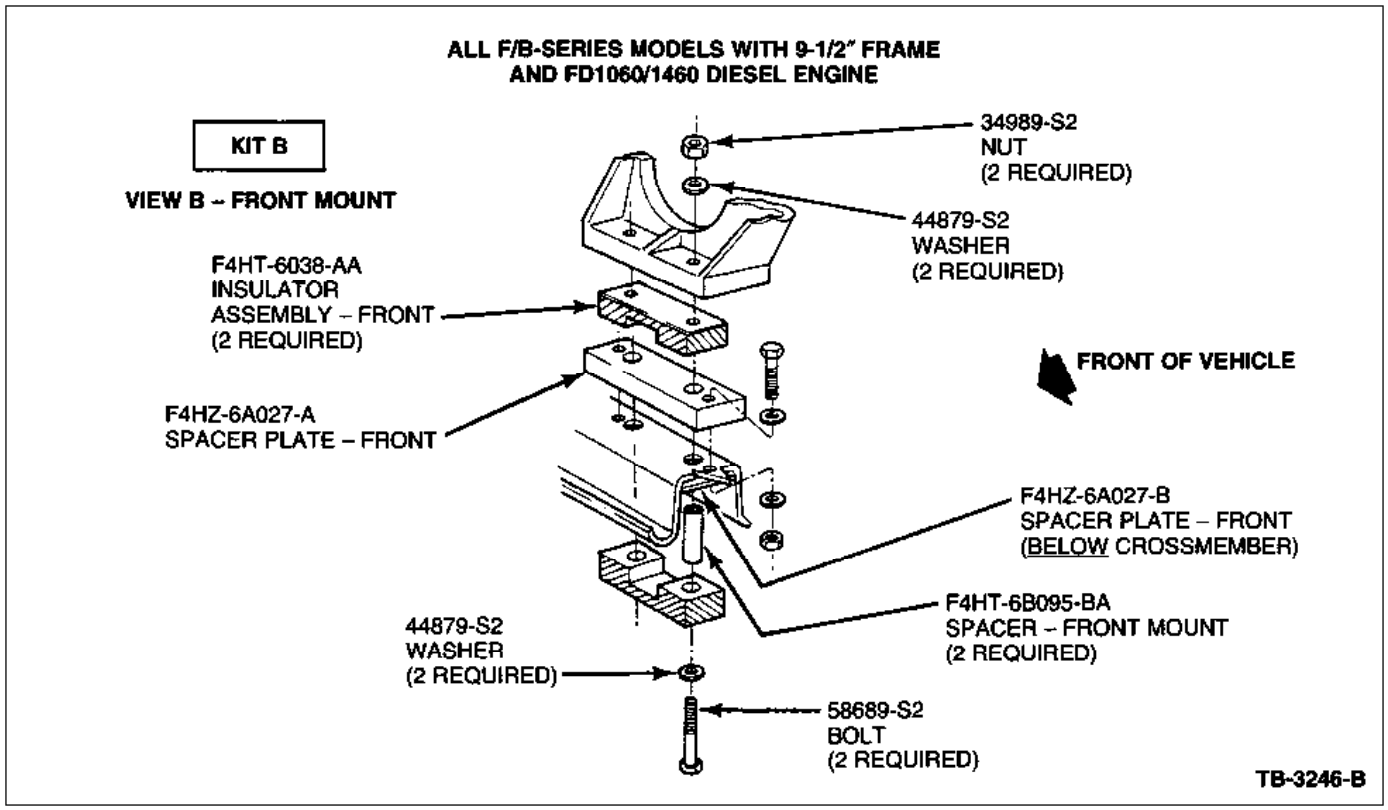


Figure 2 - Article 95-23-15

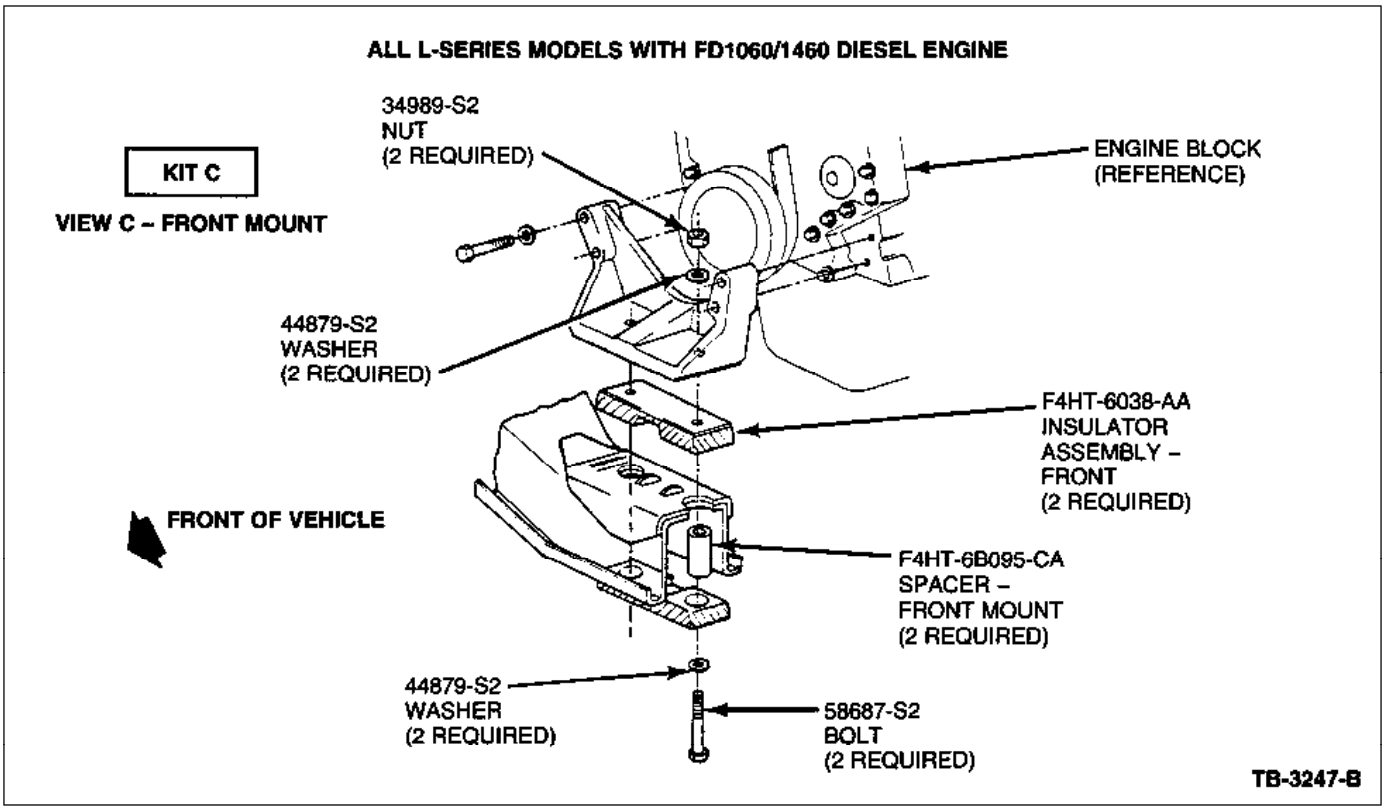


Figure 3 - Article 95-23-15

4. Install the new bolts, nuts and washers as described in the appropriate sketch. Refer to Figures 1, 2 and 3. Tighten nuts to 102-142 N-m (75-105 lb-ft).

5. Block the transmission to prevent movement/damage when the mounts are removed.

6. Remove and RETAIN the two (2) bolts and the rear engine support cap retaining the rubber isolator to the frame bracket. Also, remove and RETAIN the four (4) bolts retaining the mount to the transmission.

7. Remove the rubber isolators from the bracket and discard.

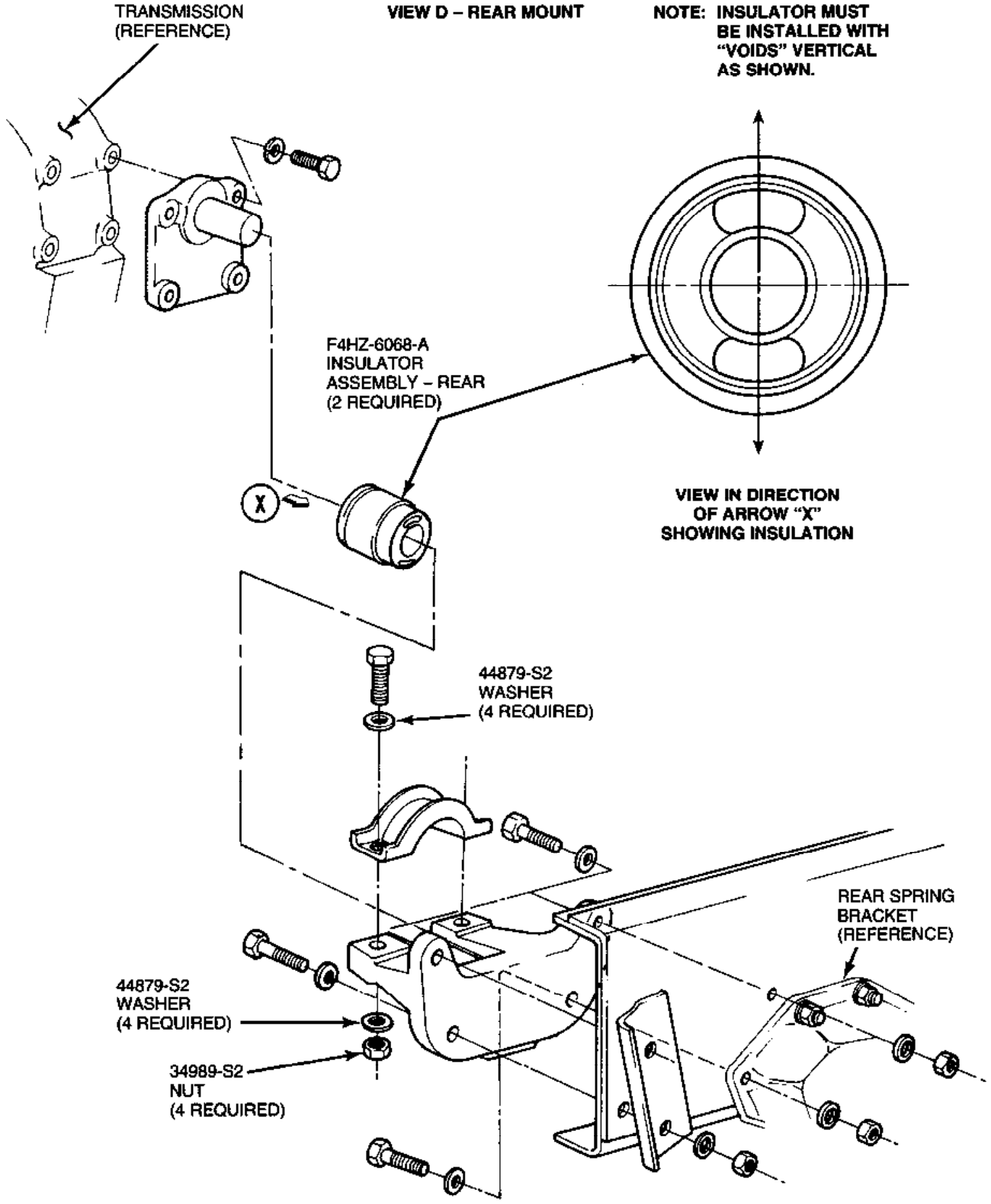
8. **Install the new rubber isolators with the "voids" at the top and bottom of the bracket.** Refer to Figure 4.

ALL HEAVY TRUCK MODELS WITH FD1060/1460 DIESEL ENGINE

KITS A, B, AND C

VIEW D – REAR MOUNT

NOTE: INSULATOR MUST BE INSTALLED WITH "VOIDS" VERTICAL AS SHOWN.



TB-3248-B

Figure 4 - Article 95-23-15

NOTE:
ISOLATORS WILL NOT PROVIDE PROPER DAMPING WITHOUT THE VOIDS LOCATED ON THE TOP AND BOTTOM.

9. Reinstall the hardware.

10. Check that engine idle speed is set between 700-750 rpms. If it is not, refer to the Powertrain Control/Emissions Diagnosis Manual, Section 19A for the proper idle setting procedures.

OTHER APPLICABLE ARTICLES: NONE

SUPERSEDES: 93-25-19

WARRANTY STATUS: Eligible Under Basic Warranty Coverage

LABOR ALLOWANCE

DEALER CODING

OASIS CODES: 497000, 499000, 703000, 703100

95-23, ***Publication Date: NOVEMBER 20, 1995***

• **Noise - "Metal Scraping" - During Turn - Vehicles With 12 To 14 Liter Engine** • **Vibration During Turn - Vehicles With 12 To 14 Liter Engine**	**Article No. 95-23-16**

MEDIUM/HEAVY TRUCK:
1990-96 L SERIES

This TSB is being republished in its entirety to include the 1994-96 model year vehicles.

ISSUE:
A loud "metal scraping" noise and vibration may be heard and felt in the cab during left or right hand turns. This noise/vibration may be caused by the front engine mount spacers contacting the front engine support crossmember. This condition has been reported only on L-9000 Series vehicles with 12 to 14 liter engines and most frequently on the Aeromax 106 and Aeromax 120 models, but may occur on other models as well.

ACTION:
Widen the front engine mount spacer holes in the front engine crossmember. Refer to the following Service Procedure for details.

SERVICE PROCEDURE

1. Confirm that this metal contact is the cause of the concern.

   a. Remove the lower engine mount isolator and spacers.

   b. Check the spacers for signs of contact with the crossmember. (A shiny spot on the spacer indicates contact.)

2. If contact has occurred, support the front of the engine and remove the upper engine mount isolator.

3. Widen the hole in the front engine crossmember from 36mm (1.4") wide to 41mm (1.6") wide with a small die grinder. Refer to Figure 1.

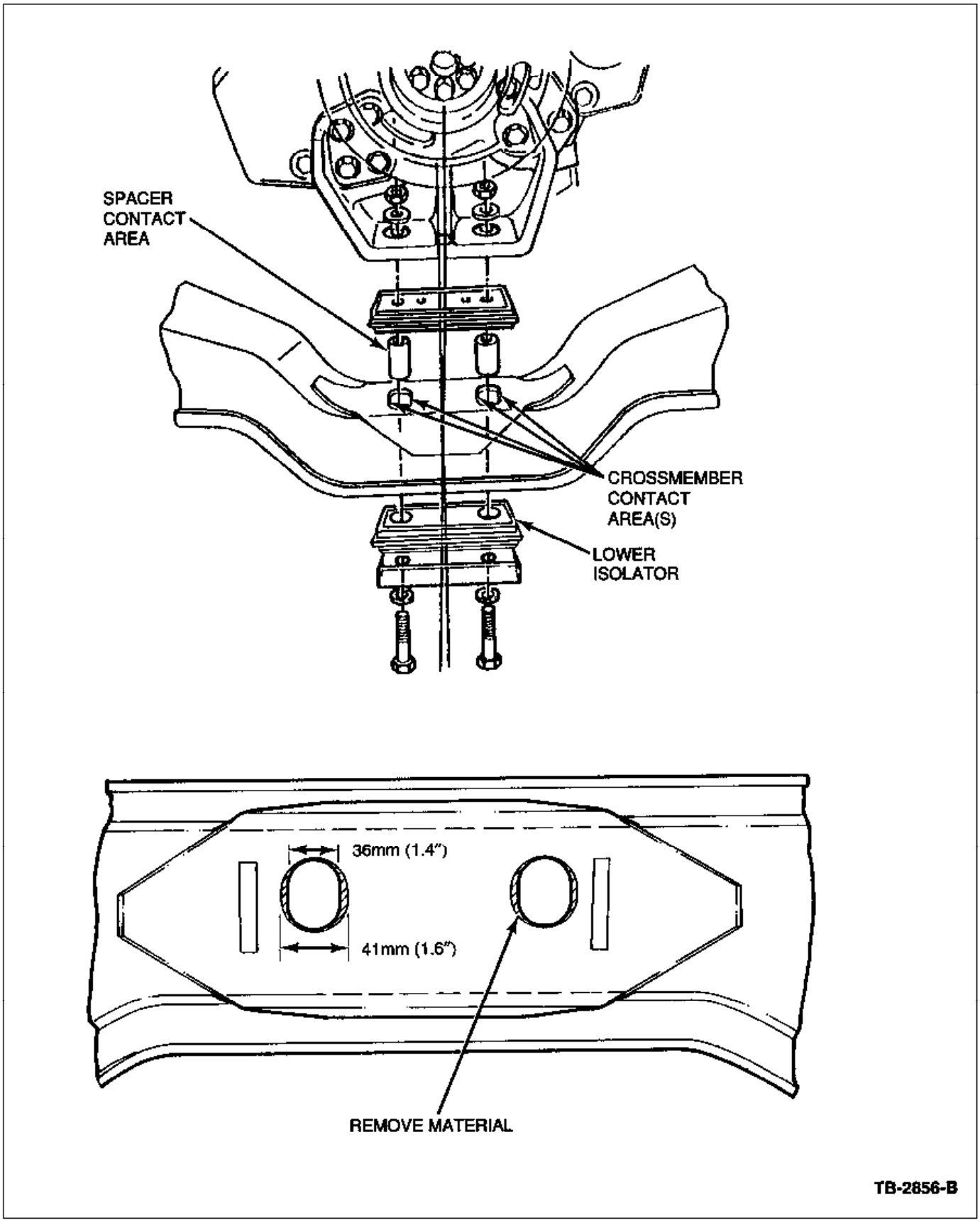


Figure 1 - Article 95-23-16

OTHER APPLICABLE ARTICLES: NONE

SUPERSEDES: 92-25-19

WARRANTY STATUS: Eligible Under Basic Warranty Coverage

LABOR ALLOWANCE

DEALER CODING

OASIS CODES: 304000, 305000, 702000, 702100, 703000

Bulletin Contents

TSB Article 95-24-10 has been superseded by Article 96-10-18.

Bulletin Contents

TSB Article 95-24-11 has been superseded by Article 96-10-21.

Bulletin Contents

TSB Article 95-25-3 has been superseded by Article 97-19-10.

95-25, ***Publication Date: DECEMBER 18, 1995***

• **Fan Clutch - Bendix - Availability Of New On-Off Control System Kits For Improved Durability - L-9000 Series - Vehicles Built Before 11/29/93** • **Fan Clutch - Excessive Wear - L-9000 With Bendix Fan Clutch - Vehicles Built Before 11/29/93**	**Article No. 95-25-14**

MEDIUM/HEAVY TRUCK:
1988-94 L SERIES

This TSB article is being republished in its entirety to update model year coverage.

ISSUE:
Early failure of the fan clutch in certain operating conditions may be due to the relatively slow response/engagement of the current fan clutch control system.

ACTION:
Install a new ON/OFF fan clutch control system kit. The new ON/OFF control system extends the life of the fan clutch by engaging it more rapidly. **Refer to revised Instruction Sheets #6327A (Figures 5, 6 and 7) or #6328A (Figures 8, 9 and 10) (for A/C or non-A/C) shown in this TSB article** for installation details.

ON/OFF FAN CONTROL SYSTEM REPLACEMENT KIT F2HZ-8C609-A FOR L-9000 SERIES WITH BENDIX CLUTCH AND AIR CONDITIONING INSTALLATION INSTRUCTIONS

Kit Contents - Part Number F2HZ-8C609-A		
Part Number	**Description**	**Quantity**
F3HZ-10884-C	Index - Temperature/Timer	1
F3HT-14806-AA	High Pressure Switch	1
379737-S	O-Ring Seal (a)	1
E9HT-8C180-AA	Solenoid Air Valve (b)	1
383833-S102	1/4" Air Inlet Adapter	2
D5TA-2B418-AE0830	1/4" Air Line - 83" Length - (solenoid air valve to fan clutch) (c)	1
95875-S	Bundling Strap - 4"	5
I.S. 6327	Instruction Sheet	1

(a) NOTE: O-Ring is used on the A/C high pressure line at the high pressure switch port.

(b) NOTE: For pre-1989 vehicles with air conditioning, check the part number on the air solenoid valve (-8C180-). If it does not have an "E9HT-" prefix, replace the valve with one that does.

(c) NOTE: Bulk tubing (D6TA-2B417-AE) cut to length and fitted at both ends with sleeve (383800-S) and nut (386478-S) forms -2B418- part.

NOTE: Application on LN/LNT models requires A/C Jumper Wire Assembly F3HT-19D887-BA*.
Application on LS/LTS/L/LT/LA/LTA models requires A/C Jumper Wire Assembly F3HT-19D887-CA*.
Application on LLS/LTLS/LL/LLA/LTLA/LTL models requires A/C Jumper Wire Assembly F3HT-19D887-DA*.
***(The A/C Jumper Wire Assembly -19D887- is not included in kit.)**

INSTRUCTIONS:

1. Remove the Kysor fan stat (-8K612-) from its port near the front of the engine (location varies - identify the location by tracing the air line from the clutch). When removing the Kysor fan stat (-8K612-) from its port near the front of the engine, also remove the 1/2" pipe fitting. If this is not removed, damage to the Index Temp/Timer may occur. Engine coolant may need to be drained to the level of the port. Insert the Index Temp/Timer switch (F3HZ-10884-C) into the open port. The threads on the -10B843- are pre-coated with sealant. Torque to 25 Ft-Lbs.
2. Replace existing A/C high pressure switch and O-Ring (-14806- and 379737-S) with those included in the kit.
3. Remove the A/C jumper wire harness (-19D887-) connecting the A/C high pressure switch (-14806-) to the air solenoid valve (-8C180-). Replace it with the appropriate wire harness (-19D887-) **not included in kit**. The new wire harness attaches to power, ground, A/C high pressure override switch (-14806-), Temp/Timer switch (-10B843-), and air solenoid valve (-8C180-). See Figures 1 and 2. Use original power and ground connection points.
4. Remove the 1/4" air line and fittings between the air solenoid valve (-8C180-) and the fan stat (-8K612-).
5. Remove the 1/8" air line and fittings between the fan stat (-8K612-) and the fan clutch (-8A627-). Also remove the 1/8" air inlet adapter from the fan clutch. Replace it with the 1/4" air inlet adapter (383833-S102) included in the repair kit.
6. Replace the removed air lines with the 1/4" air line (-2B418-) included in the kit. See Figure 3. Line routes from fan clutch to air solenoid valve.

NOTE: For pre-1989 vehicles with A/C, check the part number on the air solenoid valve (-8C180-). If it does not have an "E9HT-" prefix, replace the valve with one that does.

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ON/OFF FAN CONTROL SYSTEM REPLACEMENT KIT F2HZ-8C609-A FOR L-9000 SERIES WITH BENDIX CLUTCH AND AIR CONDITIONING INSTALLATION INSTRUCTIONS

Figure 5 - Article 95-25-14

FORD HEAVY TRUCK FAN CLUTCH OPERATION
WITH INDEX CONTROL SYSTEM FIELD FIX
(WITH AIR CONDITIONING)

AIR FLOWS FROM THE AIR SUPPLY TO THE AIR SOLENOID VALVE. WITH THE A/C REFRIGERANT PRESSURE AND THE ENGINE COOLANT TEMPERATURE WITHIN NORMAL RANGES, ELECTRIC CURRENT FLOWS THROUGH THE COOLANT TEMPERATURE SWITCH AND THE A/C REFRIGERANT HIGH-PRESSURE SWITCH TO THE AIR SOLENOID VALVE. THE CURRENT OPENS THE NORMALLY CLOSED AIR SOLENOID VALVE SO THAT AIR IS SUPPLIED TO THE FAN CLUTCH, DISENGAGING IT. WHEN THE TEMPERATURE SWITCH OR THE A/C HIGH-PRESSURE SWITCH OPENS, THE ELECTRICAL CIRCUIT IS BROKEN. WITHOUT CURRENT, THE AIR SOLENOID VALVE CLOSES, CUTTING OFF THE AIR SUPPLY TO THE FAN CLUTCH, VENTING THE AIR IN THE FAN CLUTCH, AND ENGAGING IT. IN ADDITION, AFTER THE A/C HIGH-PRESSURE SWITCH RESETS, A TIMER WITHIN THE TEMPERATURE SWITCH CASE IS TRIGGERED WHICH KEEPS THE AIR SOLENOID VALVE DEACTIVATED (i.e., FAN ON) FOR THREE MORE MINUTES.

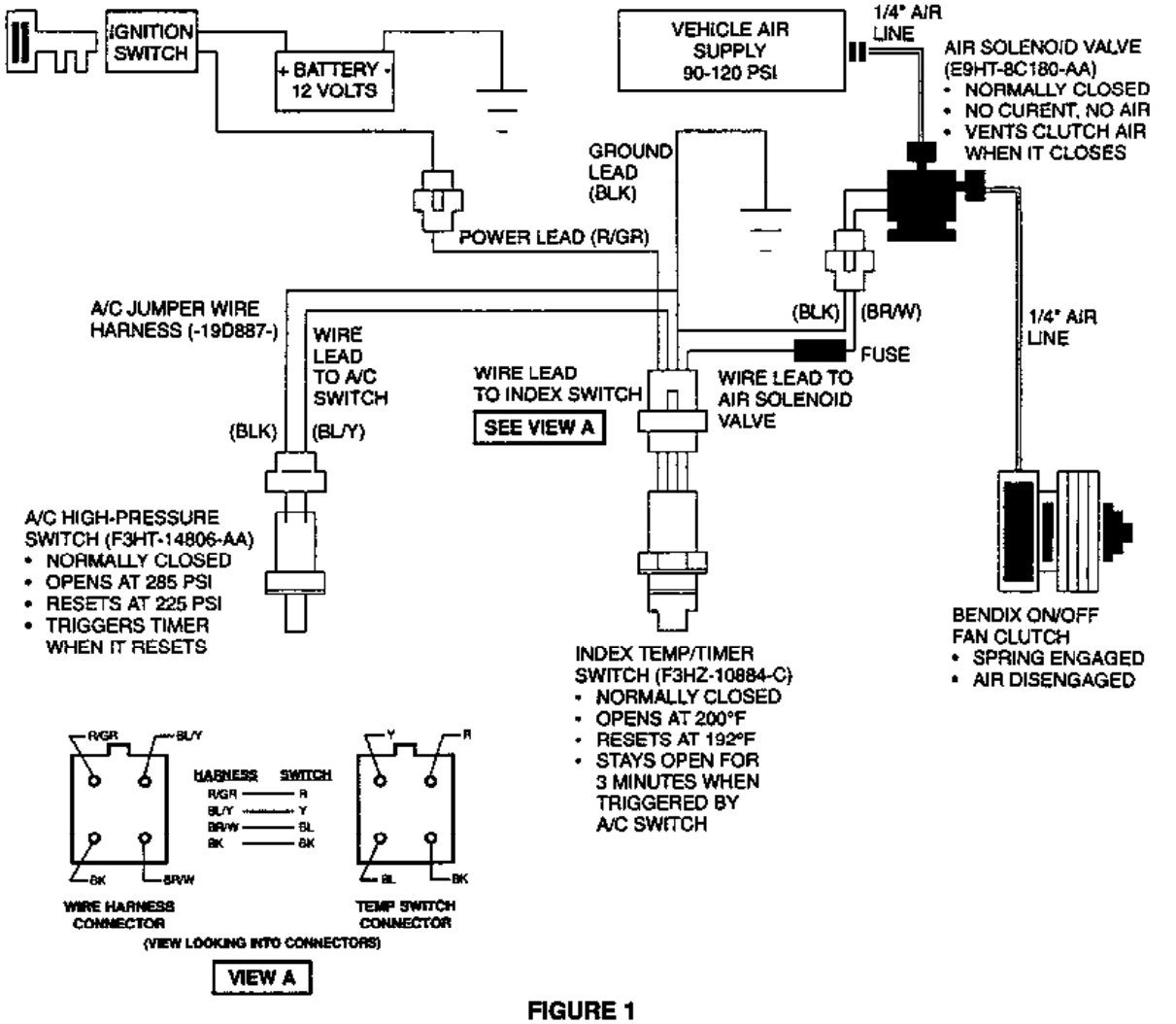

FIGURE 1

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ON/OFF FAN CONTROL SYSTEM REPLACEMENT KIT F2HZ-8C609-A FOR L-9000 SERIES WITH BENDIX CLUTCH AND AIR CONDITIONING INSTALLATION INSTRUCTIONS

Figure 6 - Article 95-25-14

WIRE HARNESS INSTALLATION

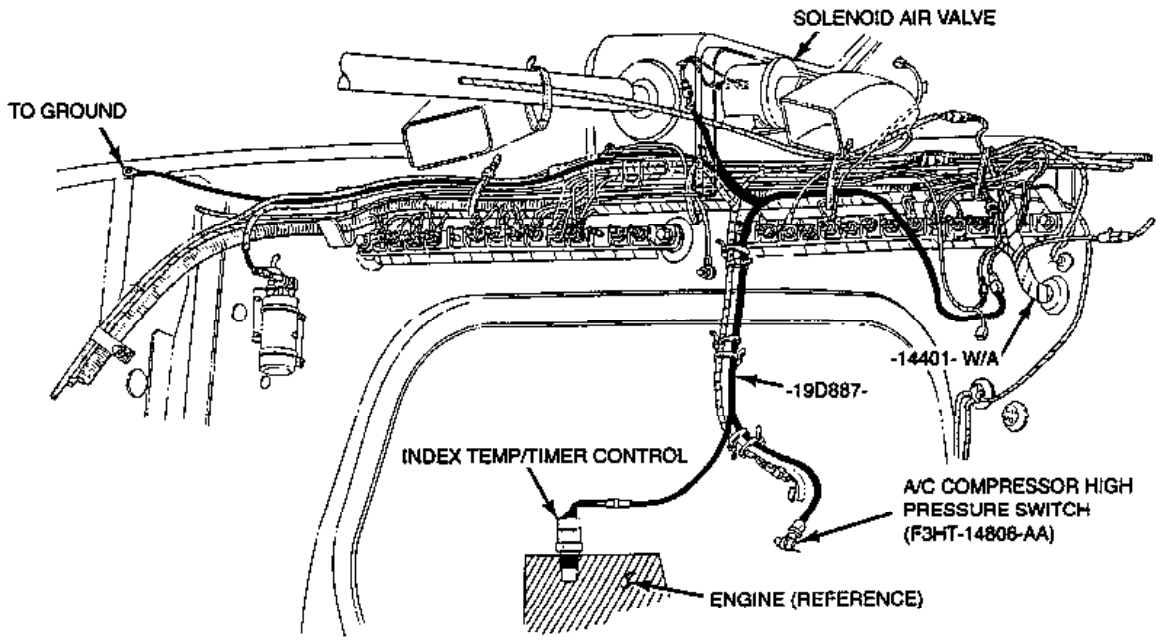

FIGURE 2

TYPICAL AIR LINE INSTALLATION AND ROUTING

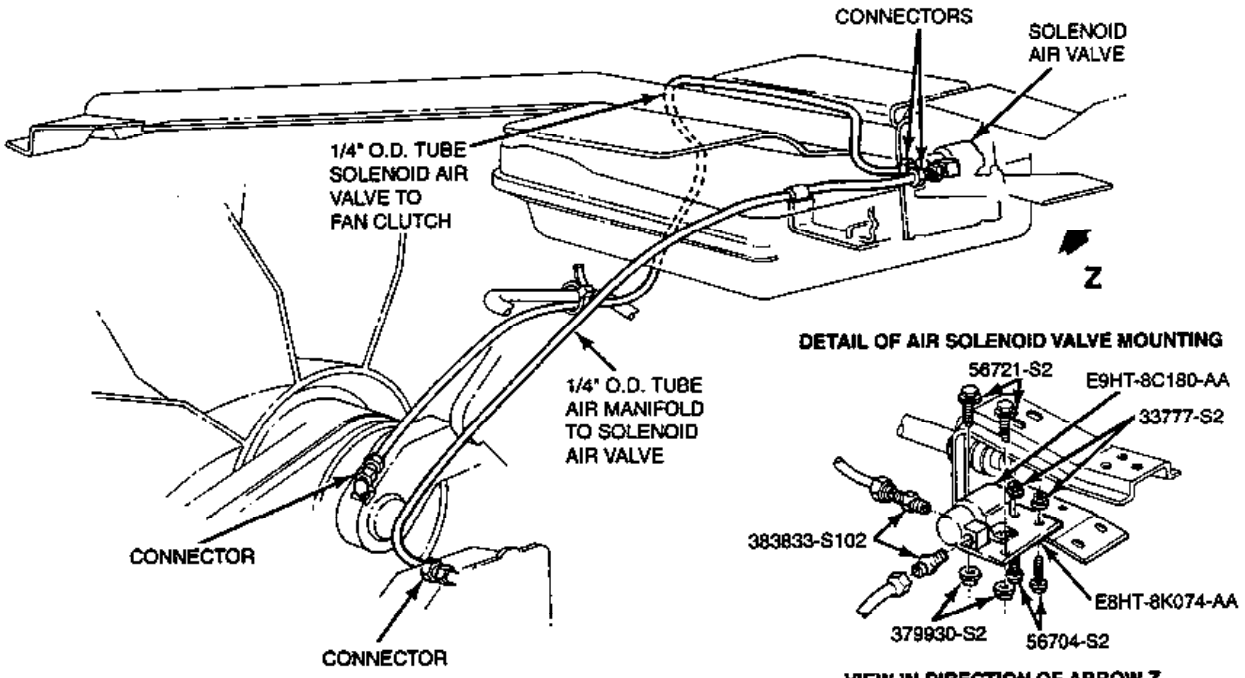

FIGURE 3

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I.S. 6327A — SHEET 3 OF 3

ON/OFF FAN CONTROL SYSTEM REPLACEMENT KIT F2HZ-8C609-A FOR L-9000 SERIES WITH BENDIX CLUTCH AND AIR CONDITIONING INSTALLATION INSTRUCTIONS

Figure 7 - Article 95-25-14

ON/OFF FAN CONTROL SYSTEM REPLACEMENT KIT F2HZ-8C609-B FOR L-9000 SERIES WITH BENDIX CLUTCH – *WITHOUT AIR CONDITIONING* INSTALLATION INSTRUCTIONS

Kit Contents - Part Number F2HZ-8C609-B		
Part Number	**Description**	**Quantity**
F3HZ-10884-C	Index - Temperature/Timer	1
E9HT-8C180-AA	Solenoid Air Valve	1
E8HT-8K074-AA	Bracket - (solenoid air valve mounting)	1
56721-S2	Bolt 5/16-18x1.01 (solenoid to bracket)	2
379930-S2	Nut 5/16-18 (solenoid to bracket)	2
56704-S2	Bolt 1/4-20x.99 (bracket to hood stabilizer)	2
33777-S2	Nut 1/4-20 (bracket to hood stabilizer)	2
F3HT-14370-AA	Jumper Plug Connector	1
383833-S102	1/4" Air Inlet Adapter	4
D5TA-2B418-AE0300	1/4" Air Line - 30" Length (solenoid air valve to air manifold) (a)	1
D5TA-2B418-AE0830	1/4" Air Line - 83" Length (solenoid air valve to fan clutch) (a)	1
95875-S	Bundling Strap - 4"	5
I.S. 6328	Instruction Sheet	1
(a) NOTE: Bulk tubing (D6TA-2B417-AE) cut to length and fitted at both ends with sleeve (383800-S) and nut (386478-S) forms -2B418- part.		

NOTE: Application on LN/LNT models requires A/C Jumper Wire Assembly F3HT-19D887-BA*.
Application on LS/LTS/L/LT/LA/LTA models requires A/C Jumper Wire Assembly F3HT-19D887-CA*.
Application on LLS/LTLS/LL/LLA/LTLA/LTL models requires A/C Jumper Wire Assembly F3HT-19D887-DA*.
***(The A/C Jumper Wire Assembly -19D887- is not included in kit.)**

INSTRUCTIONS:

1. Remove the Kysor fan stat (-8K612-) from its port near the front of the engine (location varies - identify the location by tracing the air line from the clutch). When removing the Kysor fan stat (-8K612-) from its port near the front of the engine, also remove the 1/2" pipe fitting. If this is not removed, damage to the Index Temp/Timer may occur. Engine coolant may need to be drained to the level of the port. Insert the Index Temp/Timer switch (F3HZ-10884-C) into the open port. The threads on the -10B843- are pre-coated with sealant. Torque to 25 Ft-Lbs.

2. Install the air solenoid valve (-8C180-) and attaching brackets. See Figure 3, Detail Z.

3. Install the jumper plug connector (-14370-) on the wire lead to the A/C high pressure switch on the wire harness (-19D887- not included in kit). Strap that part of the wire out of the way.

4. Install the wire harness (-19D887-) to power, ground, temp/timer switch (-10B843-) and the air solenoid valve (-8C180-). See Figures 1 and 2.

5. Remove the 1/4" air line leading from the air manifold on the cab to the fan stat (-8K612-).

6. Remove the 1/8" air line and fittings between the fan stat (-8K612-) and the fan clutch (-8A627-). Also remove the 1/8" air inlet adapter from the fan clutch. Replace it with the 1/4" air inlet adapter (383833-S102) included in the repair kit.

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9-93

ON/OFF FAN CONTROL SYSTEM REPLACEMENT KIT F2HZ-8C609-B FOR L-9000 SERIES WITH BENDIX CLUTCH - W/O AIR CONDITIONING INSTALLATION INSTRUCTIONS

Figure 8 - Article 95-25-14

7. Replace the removed air lines with the 1/4" air line included in the kit. See Figure 3.

NOTE: For non-A/C vehicles, the Timer function of the Temp/Timer switch is not used.

FORD HEAVY TRUCK FAN CLUTCH OPERATION WITH INDEX CONTROL SYSTEM FIELD FIX (WITHOUT AIR CONDITIONING)

AIR FLOWS FROM THE AIR SUPPLY TO THE AIR SOLENOID VALVE. WITH THE ENGINE COOLANT TEMPERATURE WITHIN NORMAL RANGE, ELECTRIC CURRENT FLOWS THROUGH THE COOLANT TEMPERATURE SWITCH TO THE AIR SOLENOID VALVE. THE CURRENT OPENS THE NORMALLY CLOSED AIR SOLENOID VALVE SO THAT AIR IS SUPPLIED TO THE FAN CLUTCH, DISENGAGING IT. WHEN THE TEMPERATURE SWITCH OPENS, THE ELECTRICAL CIRCUIT IS BROKEN. WITHOUT CURRENT, THE AIR SOLENOID VALVE CLOSES, CUTTING OFF THE AIR SUPPLY TO THE FAN CLUTCH, VENTING THE AIR IN THE FAN CLUTCH, AND ENGAGING IT.

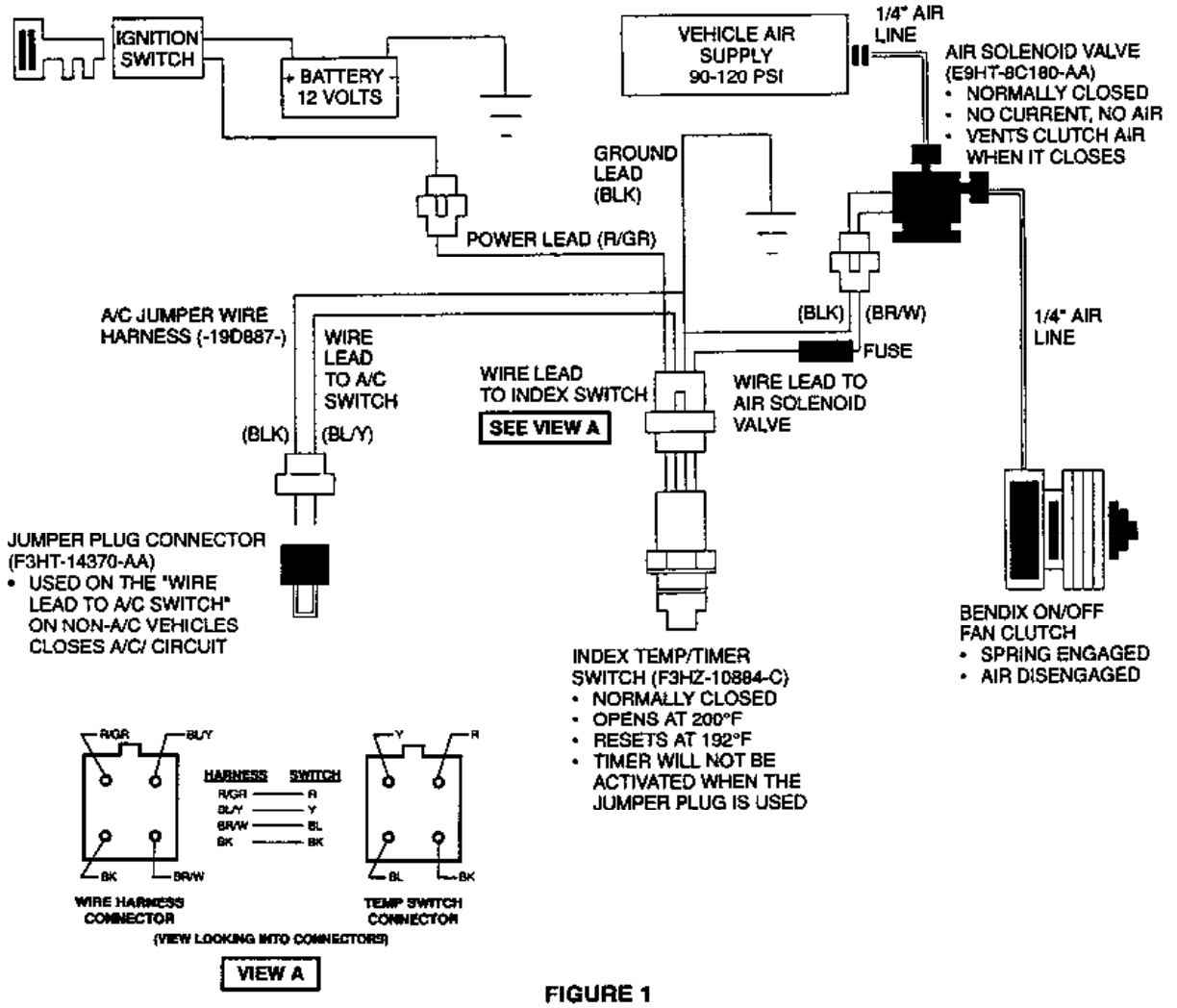

FIGURE 1

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9-93

I.S. 6328A — SHEET 2 OF 3

ON/OFF FAN CONTROL SYSTEM REPLACEMENT KIT F2HZ-8C609-B FOR L-9000 SERIES WITH BENDIX CLUTCH - W/O AIR CONDITIONING INSTALLATION INSTRUCTIONS

Figure 9 - Article 95-25-14

WIRE HARNESS INSTALLATION

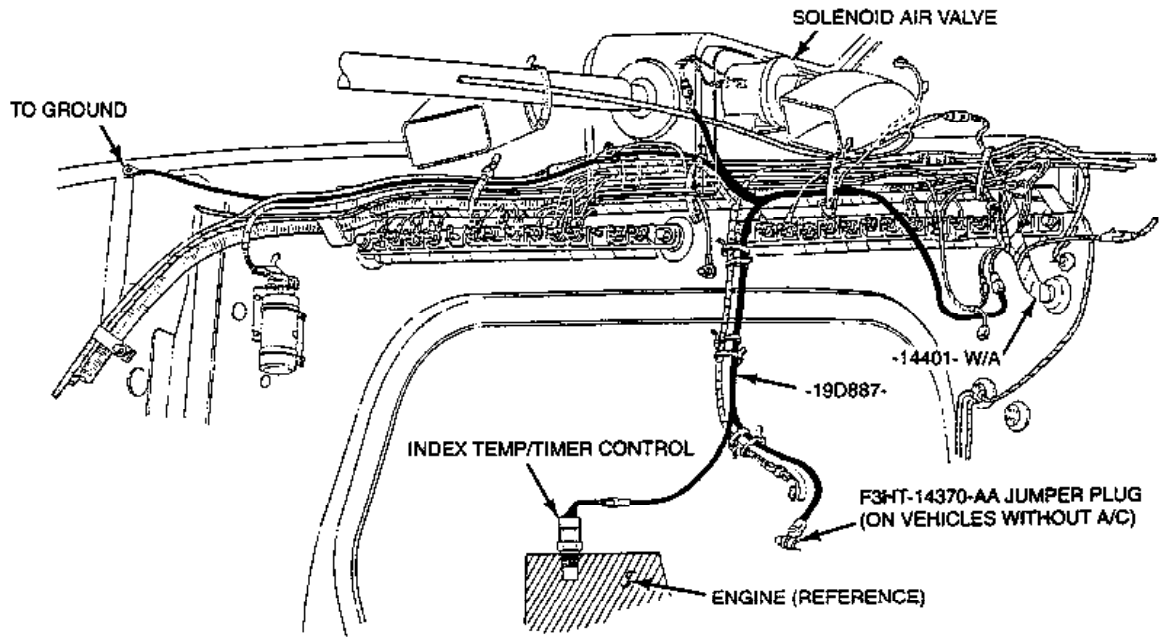
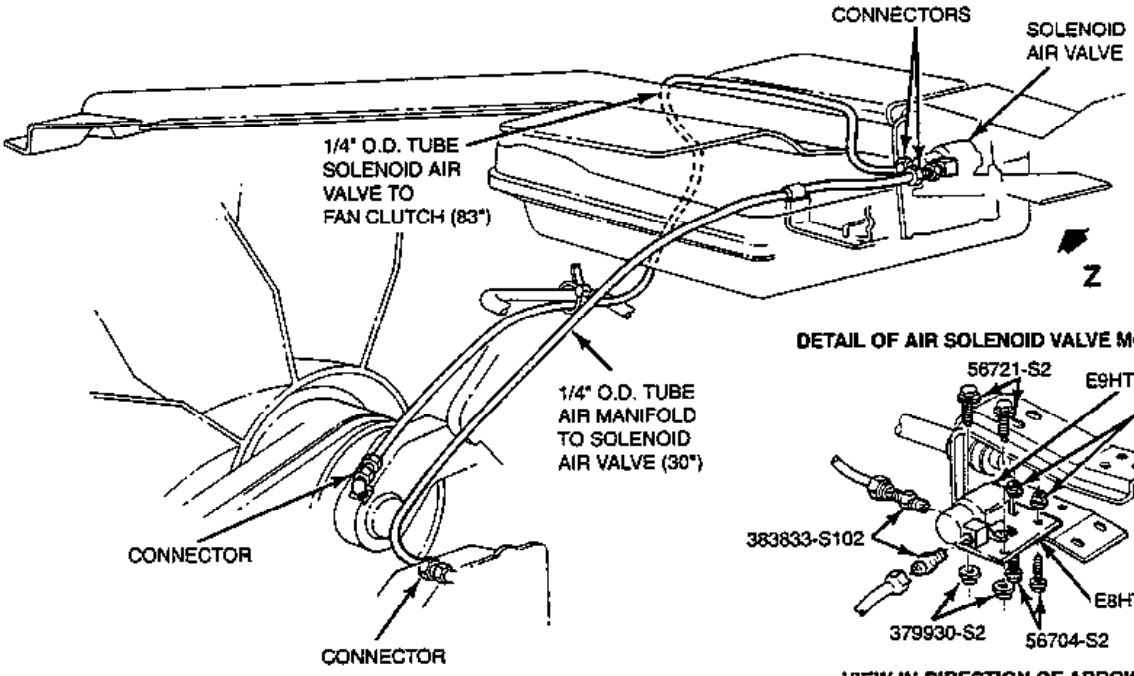
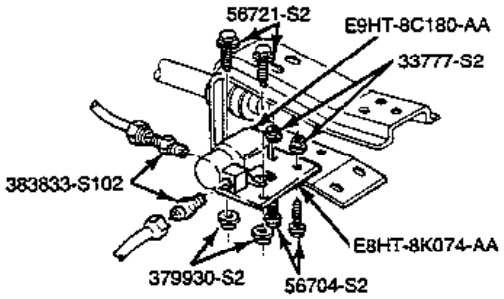


FIGURE 2

TYPICAL AIR LINE INSTALLATION AND ROUTING



DETAIL OF AIR SOLENOID VALVE MOUNTING



VIEW IN DIRECTION OF ARROW Z

FIGURE 3

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I.S. 6328A SHEET 3 OF 3

ON/OFF FAN CONTROL SYSTEM REPLACEMENT KIT F2HZ-8C609-B FOR L-9000 SERIES WITH BENDIX CLUTCH - W/O AIR CONDITIONING INSTALLATION INSTRUCTIONS

Figure 10 - Article 95-25-14

DESCRIPTION

The new system uses a coolant temperature sensing switch to trigger an air solenoid valve, providing "crisper" fan engagements than the current wax pellet fan stat. Refer to the Parts List And Application Chart, Figure 1, for a list of components in each kit and proper parts usage for each truck series. **Note that an appropriate wire harness must be ordered separately from the control system kit.**

ON/OFF FAN CLUTCH CONTROL SYSTEM KIT — PARTS LIST AND APPLICATION CHART
(L-9000 SERIES WITH BENDIX FAN CLUTCH)

QTY	ENGINEERING PART NUMBER	PART DESCRIPTION	VEHICLE			PARTS ADDED		PARTS DELETE	
			LN/LNT	LS/LTS/L LT/LA/LTA	LLS/LTLS/LL LLA/LTLA/LTL	WITH A/C	WITHOUT A/C	WITH A/C	WITHOUT A/C
	-8K612-	Valve Ass'y. – Fan Thermostat Control (FANSTAT)						X	X
1	F3HT-10B843-SA F3HZ-10884-C (e)	INDEX Temp/Timer Electrical Temperature Switch	X	X	X	X	X		
	-19D887-	Wiring Ass'y. – A/C Jumper						X	
1	F3HT-19D887-BA	Wiring Ass'y. – A/C Jumper (d)	X	–	–	X	X		
1	F3HT-19D887-CA	Wiring Ass'y. – A/C Jumper (d)	–	X	–	X	X		
1	F3HT-19D887-DA	Wiring Ass'y. – A/C Jumper (d)	–	–	X	X	X		
1	F3HT-14370-AA	Connector – Wire Ass'y. Jumper Plug	X	X	X	–	X		
	-14806-	A/C High Pressure Switch						X	
1	F3HT-14806-AA	A/C High Pressure Switch	X	X	X	X	–		
1	379737-S	O-Ring Seal (a)	X	X	X	X	–	X	
1	E9HT-8C180-AA	Solenoid Air Valve	X	X	X	(b)	X	(b)	
1	E8HT-9K074-AA	Bracket – Solenoid Air Valve Mounting	X	X	X	–	X		
2	56721-S2	Bolt – 5/16-18x1.01 (solenoid-to-bracket)	X	X	X	–	X		
2	379930-S2	Nut – 5/16-18 (solenoid-to-bracket)	X	X	X	–	X		
2	56704-S2	Bolt – 1/4-20x0.99 (bracket-to-hood stabilizer)	X	X	X	–	X		
2	33777-S2	Nut – 1/4-20 (bracket-to-hood stabilizer)	X	X	X	–	X		
	-2B473-	1/8 O.D. Tube (FANSTAT-to-fan clutch)						X	X
	-2B418-	1/4 O.D. Tube (air manifold-to-sol. air valve)							X
	-2B418-	1/4 O.D. Tube (sol. air valve-to-FANSTAT)						X	
1	D5TA-2B418-AE0300 (c)	1/4 O.D. Tube (air manifold-to-sol. air valve) (30")	X	X	X	–	X		
		1/8 O.D. Tube (sol. air valve-to-fan clutch)						X	X
1	D5TA-2B418-AE0830 (c)	1/4 O.D. Tube (sol. air valve-to-fan clutch) (83")	X	X	X	X	X		
2	383833-S102	Connector – 1/4 inst. x 1/8 ex. pipe	X	X	X	X	–	X	
4	383833-S102	Connector – 1/4 inst. x 1/8 ex. pipe	X	X	X	–	X		X
5	95875-S	Strap – 4" Bundling (use as needed)	X	X	X	X	X		

X Denotes that part is required for field fix installation. Check vehicle and options that are applicable.
(a) O-ring is used on the A/C high pressure line at the high pressure switch port.
(b) If vehicle is older than model year 1989, replace existing solenoid air valve with this newer part.
(c) Bulk tubing (D6TA-2B417-AE) cut to length and fitted at both ends with sleeve (383800-S) and nut (386478-S) forms -2B418- part.
(d) Not included in kit; must be ordered separately.
(e) Service part number.

Figure 1 - Article 95-25-14

INSTALLATION

Installation of a new ON/OFF fan clutch control system kit provides the following benefits:

- The electrical temperature switch provides a more crisp fan clutch engagement
- A 3 minute time delay triggered by the A/C high pressure switch prevents unstable air conditioning compressor pressure inputs from cycling the fan clutch excessively
- Air line routing to the fan clutch is simplified
- A new wire harness is used to join the Temp/Timer switch, the A/C high pressure override switch and the air solenoid valve.

NOTE:
ALL VEHICLES WITH OR WITHOUT A/C REQUIRE AN A/C JUMPER HARNESS (NOT INCLUDED IN KIT). IN ADDITION, VEHICLES WITHOUT A/C USE A SPECIAL JUMPER PLUG (INCLUDED IN KIT) AT THE A/C PRESSURE SWITCH CONNECTOR. REFER TO INSTRUCTION SHEET 6328A FOR NON-A/C VEHICLES, FIGURES 8 THROUGH 10.

FAN DRIVES - SYMPTOMS AND DIAGNOSIS

Typical symptoms of the Bendix fan drive when subjected to faulty controls are:

- Smoke from the clutch as it is engaging
- Blistered paint on the exterior of the cone surface
- "Blued" exterior cone surface
- Air leaks due to heat hardening of the O-ring seals
- Excessive lining wear - at 480,000 km (300,000 miles), the fan clutch cone should extend not more than 3.175mm (1/8") over its mating hub, indicating 50% lining wear. At 100% lining wear, the cone will extend 6.35mm (1/4") over the hub and the clutch will no longer engage.

CAUSAL FACTORS

A slowly exhausting control system may be due to:

- Kinked air line(s)
- Overcrimped fitting(s)
- Deteriorating control valve (one that exhausts slowly, leaks, or traps air pressure)
- Contaminated/clogged air solenoid valve
- Anything that restricts the air from exhausting out of the clutch in less than 3 seconds on engagement.

Lack of air pressure to fully engage the clutch may be due to:

- A leaking control valve
- Leaking air line(s) (the clutch needs 80 psi to fully disengage).

Frequent clutch cycling may be due to:

- A malfunctioning pressure override switch
- A malfunctioning control valve
- "Chattering" A/C high pressure override switch (if engaging the clutch frequently at high engine rpm).

FAN CLUTCH CONTROL SYSTEM DIAGNOSTIC PROCEDURE		
Problem	**Possible Cause**	**Solution**
1. Fan won't engage when manual override is turned on.	Manual override switch, air solenoid valve or related plumbing or wiring is faulty.	Replace faulty component.
2. Fan won't cycle on when air conditioning test is performed.	Outside air temperature is too low, there is a low refrigerant charge or refrigerant pressure switch is faulty.	a. Check air conditioning system. b. Replace pressure switch if necessary.
3. Overtemp warning activates before fan engages.	Defective overtemp warning switch.	Replace overtemp warning switch.
4. Engine appears to overheat. (Fan won't engage when engine coolant temperature gauge is above 91-96°C (195-205°F) or overtemp warning activates before fan engages.)	a. Air solenoid valve may be plumbed incorrectly. b. Overtemp warning switch faulty (warning light activates prematurely). c. Overtemp warning switch is too far away from the fan temperature switch. d. Temperature gauge is faulty (reads high). e. Fan temperature switch is faulty.	a. Check solenoid plumbing. Replumb solenoid valve. b. Replace overtemp warning switch. c. Move overtemp warning switch as close to the fan temperature switch as possible. d. Replace temperature gauge. e. Replace fan temperature switch.
5. Fan engages at low engine temperatures while vehicle is moving.	a. Normal condition in extremely hot weather or at slow vehicle speeds in warm weather. b. Faulty temperature gauge. c. A/C system overcharged or condenser covered with debris. d. Refrigerant pressure switch may be faulty. e. Fan temperature switch is faulty if fan engages at low engine temperature and A/C is off.	— b. Replace temperature gauge or sender. c. Check A/C system. d. Replace pressure switch if necessary. e. Replace fan temperature switch.
6. Fan won't run under any condition.	a. Air line may be leaking (Horton/Evans air-on fan drives). b. Wiring may be shorted and/or fuses, circuit breakers blown. c. Air solenoid may be faulty. Test air solenoid valve by shorting across the terminals of the temperature switch to energize the air solenoid valve and to activate the fan drive.	a. Check air lines. Fix where necessary. b. Check wiring, fuses and circuit breakers. c. If solenoid does not activate, replace solenoid.

Figure 2 - Article 95-25-14

FAN CLUTCH CONTROL SYSTEM DIAGNOSTIC PROCEDURE		
Problem	**Possible Cause**	**Solution**
7. Fan runs all the time when the air conditioning is off.	a. Manual override switch is ON. b. Air solenoid valve may be faulty or plumbed incorrectly. c. Air line to clutch may be leaking (Bendix/Kysor air-off fan drives). d. Fan temperature switch may be stuck open. With engine temperature below 82°C (180°F), short across terminals. If fan turns off, switch is faulty. e. Pressure switch may be stuck open. Turn off A/C system. If fan continues to run, short across pressure switch. If fan stops, pressure switch is defective.	a. Turn manual override off. b. Check air solenoid valve plumbing. Replace valve if faulty. c. Check air lines. Fix where necessary. d. Replace fan temperature switch. e. Replace pressure switch.
8. Fan runs all the time when the air conditioning is on.	a. This is a normal condition in extremely hot weather. Spray water on A/C condenser (fan should disengage for a short period of time and then re-engage after water evaporates). b. Air conditioning system may be overcharged or condenser covered with debris. Turn OFF the A/C system. If the fan stops, the refrigerant pressure switch is functioning. c. Pressure switch may have drifted out of calibration. Use pressure gauge to compare actual fan-on and fan-off pressures to specified pressures.	a. Normal condition in hot weather. b. Service A/C system. Check A/C pressure and condenser. c. If out of calibration, replace pressure switch.
9. Fan operation is erratic.	a. Loose electrical connection. b. Fan temperature or pressure switch may be faulty.	a. Check wiring. Fix where necessary. b. If other system components and connections check out OK: • Replace pressure switch if erratic fan operation is associated with air conditioning at idle OR • Replace fan temperature switch if erratic operation occurs primarily when the engine is hot.

Figure 3 - Article 95-25-14

FAN CLUTCH CONTROL SYSTEM DIAGNOSTIC PROCEDURE		
Problem	**Possible Cause**	**Solution**
10. Fan cycles frequently when engine is hot.	The fan should remain engaged long enough to reduce temperature 3.5-5°C (7-10°F). The fan temperature switch is defective if the fan disengages after only a 1.5-2°C (3-4°F) reduction.	Replace fan temperature switch.
11. Fan cycles frequently when vehicle is stationary with A/C on.	Up to 4 cycles per minute is a normal condition for conventional control systems. Turn off air conditioning system and cycling should stop.	To reduce cycling by up to 90%, install an Index K7 fan control system.
12. Fan turns on whenever ignition is on (turns off when engine gets hot).	Air solenoid valve plumbed backward.	Check solenoid installation instructions. Plumb correctly.
13. Control system fuses blown.	a. If the fuses blow whenever the ignition is turned on, the problem is most likely related to a fault in the wiring. b. If the fuses blow only when the fan engages, the fault is probably associated with the solenoid valve.	a. Check wiring and fix where necessary. b. Use an ohmmeter to check for a shorted solenoid coil (the coil resistance should be greater than 14 ohms). If shorted, replace air solenoid valve.

Figure 4 - Article 95-25-14

OTHER APPLICABLE ARTICLES: NONE

SUPERSEDES: 93-21-21

WARRANTY STATUS: Eligible Under Basic Warranty Coverage

LABOR ALLOWANCE

DEALER CODING

OASIS CODES: 402000

95-25, ***Publication Date: DECEMBER 18, 1995***

Cooling System - Heater Supply Tube Leaking Coolant - Vehicles With Detroit Diesel Series 60 Engine	**Article No. 95-25-15**

MEDIUM/HEAVY TRUCK:
1995 L SERIES

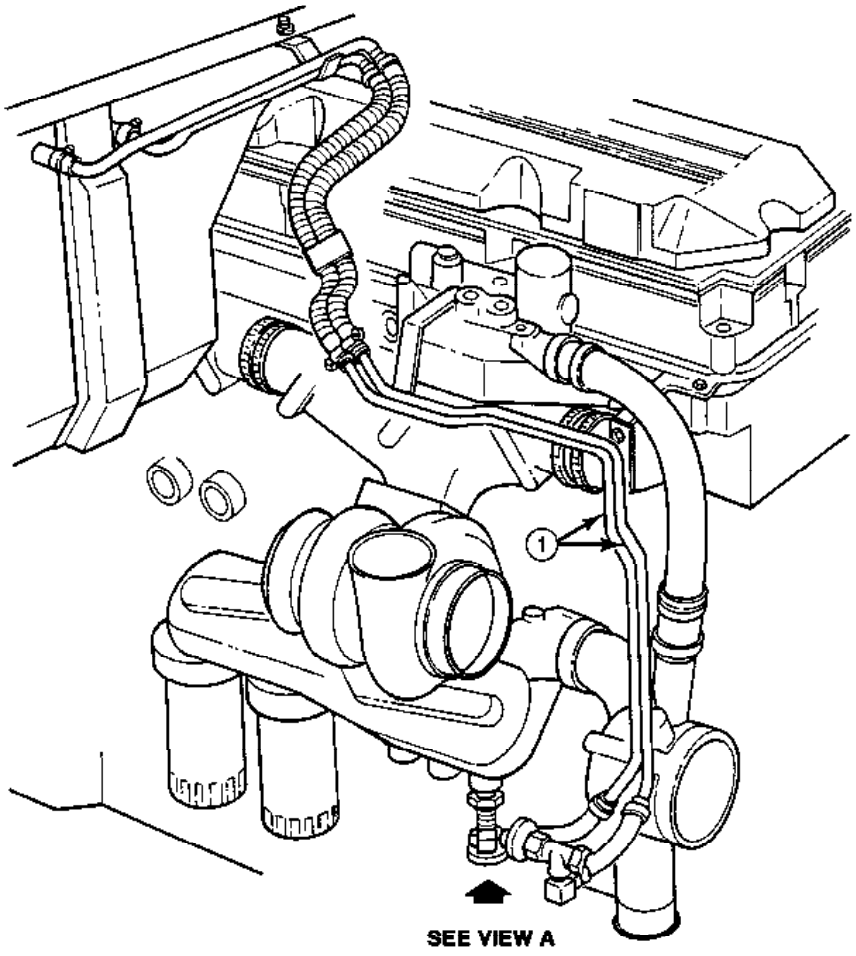
ISSUE:
The heater supply tube may leak on some vehicles. This may be due to spot weld separation at the heater supply tube stand-off bracket causing a hole in the supply tube.

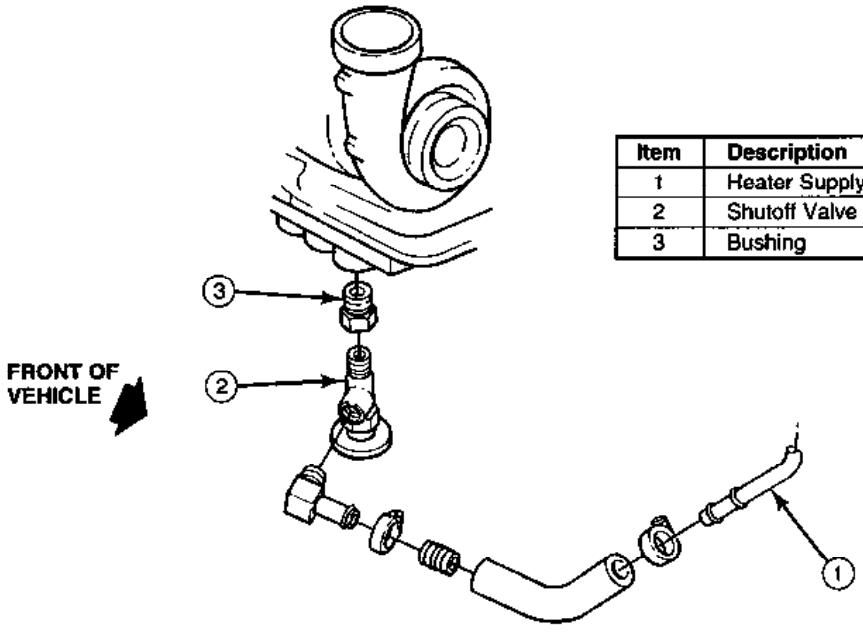
ACTION:
Replace and re-route the heater supply tube with a revised design part. Refer to the following Service Procedure for details.

SERVICE PROCEDURE

1. Drain the engine coolant.

2. Remove the heater supply/return tube assembly (Figure 1, Item 1). Remove the heater supply shutoff valve and bushing from the oil cooler (Figure 1, Items 2 and 3 in View A). Retain the valve for reuse, discard the bushing.





Item	Description
1	Heater Supply/Return Tube Assembly
2	Shutoff Valve
3	Bushing

TB-4376-A

Figure 1 - Article 95-25-15

3. Locate the 3/4" pipe plug near the center of the cylinder head, just behind the thermostat housing (Figure 2). Remove the plug and retain for reuse. Install the 389275-S101, or equivalent (1/2" internal, 3/4" external, 45 degree) pipe elbow into the cylinder head. Index the fitting so the opening points forward.

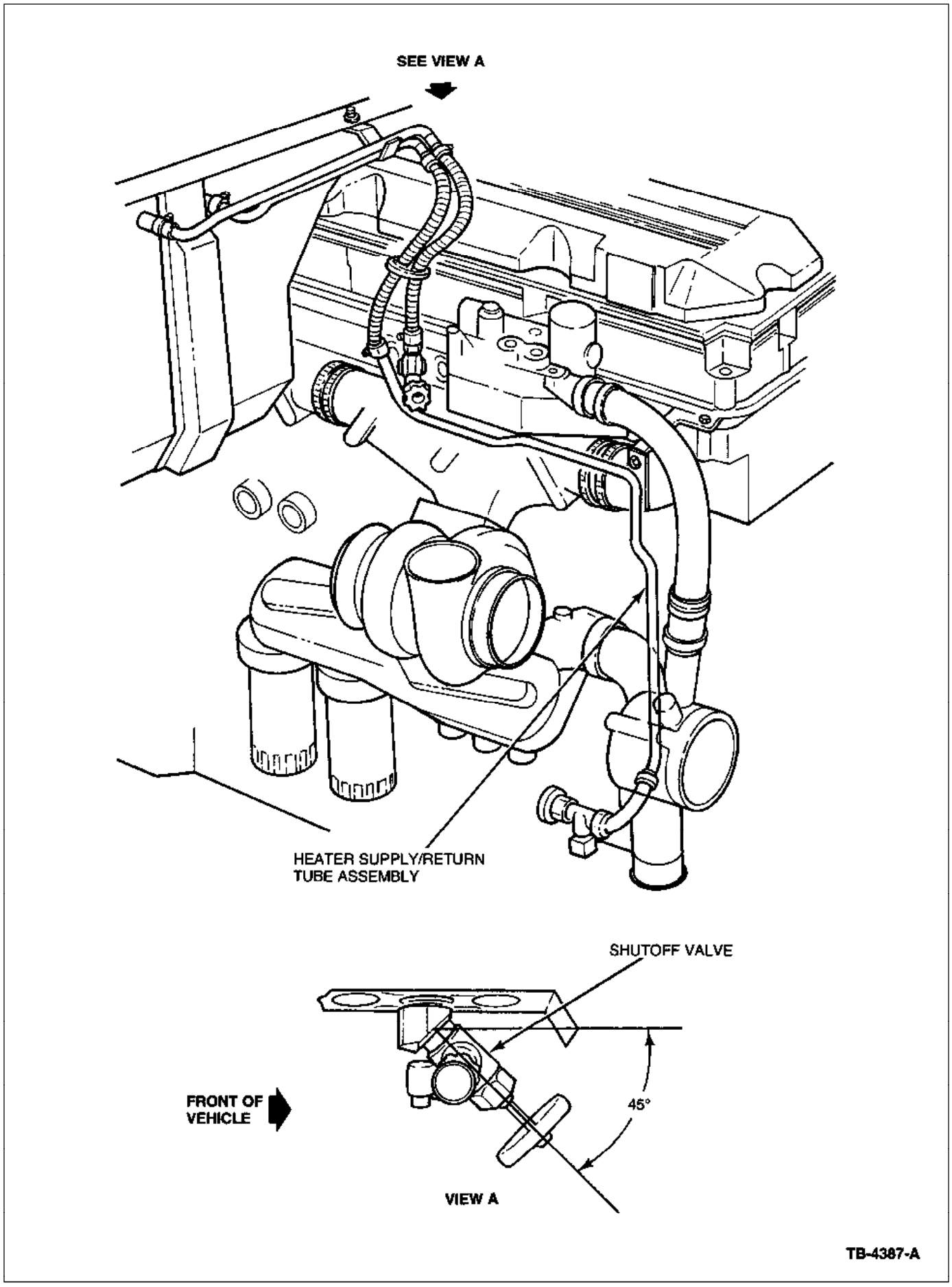


Figure 2 - Article 95-25-15

4. Remove the hose connector from the water shutoff valve removed earlier. Install a 391140-S101, or equivalent straight connector (5/8" hose x 1/2"-14 external pipe) on the valve and install the valve into the elbow installed in Step 3. Index the valve (Figure 2, View A - View A is looking down at the valve).

5. Install the pipe plug removed from the cylinder (Step 3) into the oil cooler where the shutoff valve was previously located.

6. Install the new heater return line on the engine. Install hoses and hose clamps; torque clamps from 3.4-4.5 N-m (30-40 lb-in). Torque the 5/16" bolt which attaches the heater tube stand-off bracket from 16.3-23 N-m (12-17 lb-ft). Install the bolt removed from the thermostat housing and torque to specification.

7. Refill coolant per instructions in the 1995 L-Series Service Manual, Section 03-03.

OTHER APPLICABLE ARTICLES: NONE

WARRANTY STATUS: Eligible Under Basic Warranty Coverage

LABOR ALLOWANCE

DEALER CODING

OASIS CODES: 402000

95-25, ***Publication Date: DECEMBER 18, 1995***

Vibration - Driveline - Vehicles With Tandem Axles And Hendrickson Air Suspension	Article No. 95-25-16

MEDIUM/HEAVY TRUCK:
1993-95 L SERIES

ISSUE:
Driveline vibration may occur on some vehicles. This may be caused by forward tandem axle input joint angles.

ACTION:
Refer to the following Service Procedure for diagnosis and details.

SERVICE PROCEDURE

1. Check to assure that the air suspension ride height is set at 10.8 cm (4.25") at the rear tandem and that the spring seat angles are 6 degrees at the forward tandem and 13 degrees at the rear tandem (seat angles are stamped in the front of the axle seat tab, on the bottom).

2. Verify vibration occurs in the higher gears at or near peak engine torque and that frame pitch measured between the rear axles is less than 45 minutes (3/4 degree).

3. Most vehicles with this concern have a main driveline with two (2) shafts (the tandem axle also has an inter-axle shaft). The coupling shaft connects to the U-joint at the rear of the transmission and the driveshaft connects to the U-joint at the front of the forward tandem axle.

4. For vehicles with a two-shaft main driveline, verify coupling shaft U-joint yokes are phased at 90 degrees (crossed when viewed from one end) and that driveshaft U-joint yokes are phased at 0 degrees (parallel when viewed from one end).

5. If the vibration is not eliminated by correcting the yoke phasing, the center bearing support height may need further adjustment to bring the center joint angle into the range shown in the following Recommended Support Mounting Chart. This angle is found by adding the slope of the coupling shaft (down toward the rear) to the slope of the driveshaft (up toward the rear). If the slopes are in the same direction, subtract the smaller slope from the larger slope to determine the joint angle.

6. Check the pinion angle of the forward rear axle. If the pinion angle is greater than 6 degrees (in relation to the ground), proceed with the following. If the pinion angle is less than 6 degrees (in relation to the ground), do not proceed with the following (noise, vibration and harshness will be increased if performed).

7. If Steps 1-5 have been performed, and the pinion angle is greater than 6 degrees (Step 6), remove the forward tandem spring seats and replace them with new 4 degree seats and 1" spacers to reduce the forward tandem axle pinion slope and input joint angle.

8. Remove the forward rear axle spring seats and discard (refer to the appropriate year L-Series Service Manual, Section 04-02E).

9. Install the 4 degree axle seats and spacers, F6HZ-5793-RA (Figure 1), using four (4) new U-bolts (2 of F2HZ-5705-D and 2 of F2HZ-5705-C), eight (8) new 384033-S2 7/8"-14 torque prevailing nuts, and the spherical and flatwashers removed earlier (if serviceable). Torque U-bolts to 542-610 N-m (400-450 lb-ft) as outlined in the L-Series Service Manual, Section 04-02E.

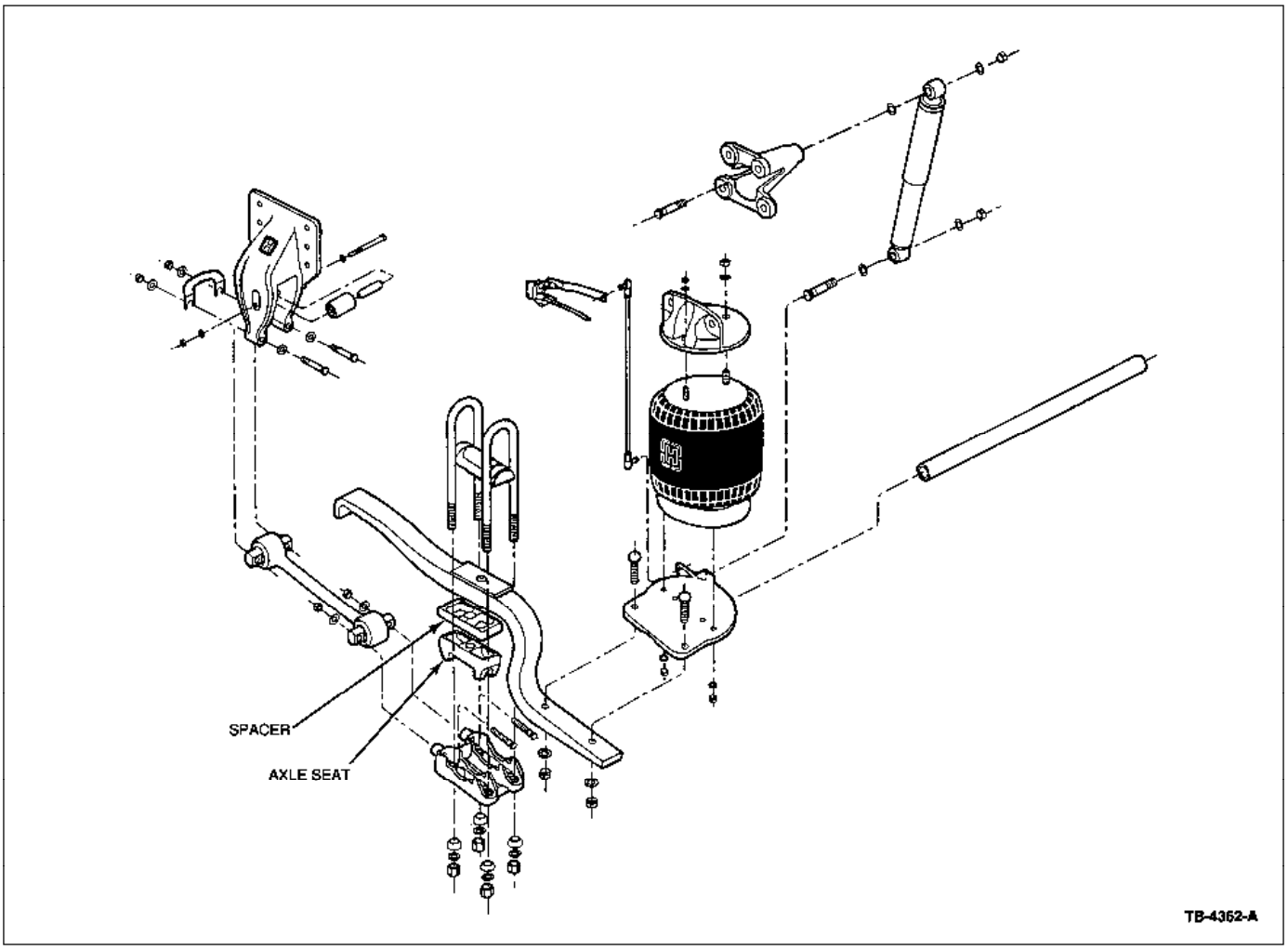


Figure 1 - Article 95-25-16

10. Recheck the ride heights and set to specifications (if needed).

OTHER APPLICABLE ARTICLES:

92-13-18

92-19-10

94-20-26

WARRANTY STATUS: Eligible Under Basic Warranty Coverage

LABOR ALLOWANCE

DEALER CODING

OASIS CODES: 703000